

off to 80 degrees and keep it on the horizon

Is it okay with everybody for a thermo?

HOU

That's good

END OF TAPE

Houston here 46 hours 44 minutes. Conrad just advised that they plan to do a roll left maneuver. Roll 80 degrees left and they will hold on that attitude. The left suit, "Pete" Conrads' suit showing a pressure of 3.71 pounds per square inch. The pressure on Dick Gordons' suit is reading 3.76. These reading coming from Hawaii. The left suit inlet temperature 49.4 degrees and the right suit inlet temperature 49.1. I think we'll have additional conversation here.

HAW Flight Hawaii

HOU Go ahead

HAW Roger. One. Check with ecom on F 55 per cent  
55 point about 56 per cent.

HOU Ecom figures we have enough.

HAW Okay.

HAW ll Hawaii

S/C Go ahead.

HAW Okay, we show about 56 per cent. You've got  
enough to get back in and out again.

S/C Okay. We may stay out and take some pictures  
for awhile.

HAW Okay, very good.

HOU Hawaii from flight

HAW Go ahead

HOU You might pass on that I've heard there is no  
cloud cover over the area this morning.

HAW No cloud cover over the area?

HOU Over this area.

HAW Okay.

HAW Just a bit of information..no cloud cover over  
the U.S.

HOU Hawaii from flight

HAW Go ahead.

HOU That's just over the Houston area that I know  
of.

HAW Okay

HOU Thought he might like to take some pictures.

HAW Okay  
In case you want to take some pictures of  
Houston, there's no cloud cover there, ll.

S/C Okay Hawaii, we're going to..we're going to  
stay out.

HAW Okay.

S/C we'll take a EVA.

HAW Sounds like a winner.

S/C Did you..I've got my PQI covered up. Could  
you tell me how much fuel I'm using, I've got  
the impression I'm using a batch.

HAW Used about 15 pounds since Carnarvon.

S/C How much?

HAW Used about 15 pounds since Carnarvon.

S/C 15 pounds since Carnarvon.

HAW We probably lost the flight.  
We've got LOS all parimeters.

HOU California has contact

California go remote.

California is remote.

Cal Gemini 11 Houston at California over.

This is Gemini Control Houston 46 hours 48 minutes into the flight. A few minutes ago "Pete" Conrad called down and indicated he was considering having Dick come back in to the spacecraft. The only purpose being that it is an easier place in which to work to change some of the lenses and change the mounts that go over the ultraviolet camera. There is no problem in any of the equipment apparently that "Pete" specifically query the ground on the amount of his oxygen remaining. He was told it was 56 per cent that it was more than enough if he wanted to bring Dick back in, close the hatch repressurize and get the camera set up for the next set of experiments it would be perfectly alright. "Pete" thought about it a little bit longer and indicated he..the last indication was that no he thought we'd just run as they are, hatch open. He also queried the ground about his fuel usage. He was advised that he had used 15 pounds of fuel since hatch opening at Carnarvon. That's 15 pounds of fuel his total propellage usage is about 25 pounds. At the start of the EVA Gemini 11 had 420 pounds of fuel remaining and this is 260 pounds extra. The crew has been vary as husbanded their fuel very well. 260 pounds was the pad they had going in to this EVA and well, it just couldn't be a better figure. John Young has put in a call through the California station we can

expect some additional conversation and we have an agreement from the crew that they'll try to take some pictures over the Houston area which is free of clouds this morning. Keep the line open and listen to any conversation as it develops.

Cal Gemini 11 Houston at California

GYM Guaymas does not gain contact with Gemini

HOU California Houston. Are we radiating?

CAL That's affirmative.

Gemini 11, Gemini 11 Houston at California over.

S/C Roger

CAL Roger, you've used about 25 pounds of fuel since Carnarvon, over.

S/C Houston Guaymas

HOU This is Houston go ahead.

S/C How much fuel did you say we used?

HOU Twenty-five pounds of propellant, over.

S/C How much?

HOU 25 pounds from Carnarvon to Hawaii.

S/C Coming in weak I can't hear you.

I've got you now, 25 pounds.

HOU That's 25 pounds "Pete".

S/C That's right 25 pounds. Garbled

Guaymas remote California local.

Guaymas remote

S/C Hey, John where are we?

HOU            You're right over Baja, California.

S/C            That's good, over Baja

HOU            Gemini 11 Houston You have used 25 pounds  
over.

S/C            Okay, now I'm with you. I couldn't hear you  
before/<sup>John</sup> You're much clearer on that tape.

Okay, it'll probably cost us another 35  
or 40 pounds then. Is that too much?

Hou            Roger, Gemini 11 We're planning to wake  
you guys up a little early tomorrow you  
know.

END OF TAPE

S/C Yes, that is what is bothering me. I am  
showing 33 percent.

HOU Roger, that is ... for that number.  
It looks like they are somewhere around El Paso  
now, 11.

S/C ...I think we inadvertently knocked 50 and number  
1 off. We just turned it back on again...

HOU Roger.  
Texas remote, Guaymas local.

TEX Texas remote.

GYM Guaymas is local.

S/C Say again.

GORDON Man, does Houston ever look beautiful down  
there! Tell Dr. Gilruth I will take his  
picture. We have got this camera tied to  
the spacecraft.

HOU Roger.

S/C Say again.

HOU You are approaching MSC now.

S/C Tell Dr. Gilruth we are going to snap his  
picture.

HOU Roger. Appreciate that.

GORDON It is beautiful down there. Boy, this is not a  
job, it is a privilege.

HOU Roger. You see those kids on the roof?

S/C They better not be.

CONRAD           Well, while he is taking the good view, I am  
just burning up looking at the sun and a real  
nice sky.

S/C               Where are we, John?

HOU               You should be right over New Orleans.

S/C               Okay.

HOU               Maybe Pensicola or Mobile.

S/C               Okay, I got....

We are drifting in rate command 80 degrees  
roll ... pitch down about 30 and we have  
got...on top of the hatch.

HOU               Roger.

HOU               Texas local.

TEX               Texas local.

S/C               Tell Dr. Gilruth we are taking a shot of the  
Cape, too.

HOU               Roger, it looks like you are going to be a  
little north of there.

Houston here. That was Dick Gordon, who was so enthusiastic  
about the view over Houston. And apparently the Cape area,  
the Jacksonville area is relatively cloud free also. The left  
suit pressure, Pete Conrad's suit shows on our TM readout here  
at 3.74 pounds per square inch. Dick Gordon's suit 3.76 pounds.  
The - Dick Gordon's heart rate is just coming to us now from

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the surgeon. He says there has been quite a bit of variation during the last 15 minutes. He has seen rates as high as 140 and as low as around a 100. He said it has gone up and down. Somewhat higher than it was at start of EVA over Hawaii where the rates were running about 90. The left suit in the temperature 49.4 degrees F and the same rate on the right suit temperature, Dick Gordon's suit. We still have a good 45 minutes left in this pass and we will have probably more conversation before they leave the Bermuda area. This is Houston standing by.

HOU Gemini 11, Houston. Do you require a point in command for the next star? Over.

S/C No, we will find it.

HOU Roger, we got some if you want to enter them. Be a little rough in that hard suit.

S/C Thanks a lot. You guys are all right. We used the old one. That is close enough for government work.

HOU Right.

END OF TAPE

GEMINI 11 MISSION COMMENTARY 9/14/66 7:47 AM TAPE 185 PAGE 1

This is Gemini Control, Houston, 47 hours 6 minutes into the flight. We still have a couple of minutes left on the Bermuda circle. During the next night pass, which will begin slightly east of Tananarive at an elapsed time of 47 hours 45 minutes, the crew will direct their attention to the star Antares and perhaps a dozen other stars that surround Antares in the constellation Scorpii - in the constellation Antares. Their next star field will be Shaula and again Orion with a guide star in Orion of Rigel, Rigel and Betelgeuse.

HOU Gemini 11, Houston.

S/C Yes.

HOU Roger, from Carnarvon you used about 50 pounds of propellant so far. Over.

S/C Okay.

Can you give me a cutoff for the early wake up?

HOU Roger, no cutoff. Over.

S/C Okay.

HOU One minute to LOS there, 11.

ANT LOS, Antigua.

END OF TAPE

This is Gemini Control Houston, 47 hours 22 minutes into the flight. The 11 crew checked in with Houston via Ascension Island a minute or so ago and the only conversation was to the effect that they were - the crew was standing by preparatory for their second night pass. They are being advised now that they are one minute to LOS and Pete Conrad came back with roger we're standing by. The night pass begins at 47 hours 45 minutes, slightly east of Tananarive. It will carry them on through to Hawaii in darkness and at 48:20 - approximately 48:20 to 25 elapsed time about one hour from now, they should be closing the hatch. That will be over the Hawaii station at the conclusion of the second night pass. We're estimating that the - and it's only an estimate now because it occurred out over the Indian Ocean out of contact, but we are estimating the hatch was opened at an elapsed time of 46 hours and 7 minutes. That may vary by a minute or two and it will probably - if it does vary it will be somewhat later than that. We don't believe that they could have gotten the cabin depressed and the hatch opened before 46:07, if anything it might be 46:08 or 46:09. At 47 hours 24 minutes that is our situation. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 47 hours 37 minutes into the flight. In the course of the last stateside pass, the surgeon has compiled some numbers on the heart rates. Dick Gordon had a high of 145 at one point, his low rate during the pass was 83. He had an average during the pass of 106 beats per minute. Pete Conrad had had a high of 120, his low was 75 and his average was 91. Gordons respirations during that period averaged 19 per minute while Conrads averaged 13. Also in the course of the pass you heard John Young and Pete Conrad refer several times to an early wakeup tomorrow morning. This refers to a possibility of an additional rendezvous in this mission, a rerendezvous, which may be attempted early tomorrow morning. The details of this maneuver and the possibilities of it happening will be discussed fully at the 9:30 briefing this morning. Since we have left the states, between Ascension and Tananarive, we seem to have chalked a dubious space first in that Pete Conrad reported both he and Dick Gordon had caught a little cat nap. He said they'd both dozed off. We have this tape from the Tananarive pass.

FD                      Tananarive go remote.

TAN                     Tananarive remote.

HOU Gemini 11 Houston at Tananarive, standing  
by. Over.

HOU Gemini 11 Houston at Tananarive, standing  
by.

S/C Roger. You got two guys taking cat naps  
up here that is all.

HOU ll this is Houston, say again. Over.

S/C I said we were taking a cat nap.

HOU Roger, that is a first. First sleeping in a  
vaccum.

S/C Well we both just fell asleep here a few  
minutes ago and woke ourselves up.

S/C Hey John, how come everything floats up  
out of the spacecraft?

HOU This is Houston, say again. Over.

S/C How come everything floats straight out of the  
spacecraft? We just let little pieces of the  
Velcro go and they all just take off straight  
up right out of the spacecraft. Although we  
are rolled over on our side.

HOU Roger. I think that's a Collins effect or the  
Cernan effect one, over.

S/C Yes, well it seems to work.

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PAGE 3

HOU Gemini 11 Houston, one minute thirty seconds  
to LOS at Tananarive. Over.

S/C I sure wish this pass was over a star field.

HOU Roger.

END OF TAPE

GEMINI 11 MISSION COMMENTARY 2/14/66 8:35 AM TAPE 188 PAGE 1

This is Gemini Control, Houston, 47 hours 52 minutes, and 11 has tagged up with Bill Garvin, the Flight Controller in Carnarvon. The conversation was brief. Pete Conrad said "we are here and we are taking pictures." So apparently they are - they will be able to complete the three constellations that are in their program for this night-side before Dick Gordon comes in over Hawaii. There are 50 - a total of 50 exposures available in the ultraviolet film pack, as many as 10 were to be used to calibrate the camera, and leaving as many as 40 for actual star spectrographic photos. The control factors<sup>1</sup> quite important in these because the exposures are relatively long - as much as 60 seconds. Most of them are at least 30 seconds long demanding very stable spacecraft. And if this pass goes like the rest of them during this EVA, we will hear very little and probably have additional conversation when we get to Hawaii regarding the hatch closure. 47 hours 54 minutes into the flight. This is Houston.

END OF TAPE

This is Gemini Control Houston, 48 hours, 7 minutes into the flight. We have had no additional contact since the spacecraft left Carnarvon. It's due over Hawaii at 48 hours 14 minutes, about 7 minutes from now. It would not appear from our orbital map that any remoting through Canton is possible. It's west Canton right now. The fuel useage thus far in the standup EVA, looks like about 50 pounds. That's the fuel. The total propellant, would be something more than that, on the order of 75 pounds, we would estimate. We still have plenty of additional fuel for whatever exercises we wanted them to take. Before we started EVA the estimate was, we had something over 200 pounds of extra fuel. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 48 hours 14 minutes into the flight. The controller at Hawaii has put in a call but there has been no acknowledgement as yet. It should be an interesting pass and we'll standby to follow it.

HAW Hawaii has intermittent TM.

HOU Roger.

S/C Hello Hawaii, Gemini 11 here. We were in the middle of ingress when you called. We have closed the hatch and we have started to repress. We've got all of S-13 complete.

HAW Okay, we copy all of that.  
Standing by for your repress.

HAW Okay, Flight. He is starting to repress right now.

HOU Okay, did you get telemetry yet.

HAW That is affirmative. Solid on both Gemini and Agena. All systems look real good.

HOU Okay, send us a couple of mains.

HAW Roger.

S/C We went to manual heater - hold 700 pounds.  
We're showing 1 psi.

HAW Roger.

HAW How about that, your meter reads just like ours.

S/C Just wanted to check you on the ground and  
see how you were doing.

HAW Are we GO?

S/C (garbled) onboards prime.  
You are go on the ground.

HAW Roger. Thank you.

S/C It's a beautiful night you have down there.

HAW Haven't had a chance to look at it yet.

HAW Incidentally right now Houston is just  
ginning up a little L-band test for you  
guys during the tether exercise. They'll  
pass that up to you over the states.

S/C Roger.

This is Houston. We clocked the cabin repressurization process starting at 48 hours 16 minutes 25 seconds. We would estimate that hatch closure was at 48 hours 15 minutes.

We are watching the cabin pressure build. It is presently showing 1.9, it will continue up to something over 5 pounds per square inch. Suit inlet temperatures both running about 50 degrees and all other values look like they are quite normal.

The surgeon is advising that in the process of ingress they did note some somewhat elevated rates associated with closing the hatch and the general maneuvering that is required to

shinny into that small space. But the surgeon also notes that once the hatch was closed the rates settled down and they are approaching the normal range, right now 85 to 90. We'll continue to monitor the pass across Hawaii. We still have three minutes.

HAW                Flight, Hawaii

HOU                Go ahead

HAW                Do you want to keep that TM switch to real  
                    time and acq aid?

HOU                Say again.

HAW                Do you want them to keep that TM switch to  
                    real time and acq aid?

HOU                Okay, as soon as he gets through he will  
                    probably put it back to real time - to command.

HAW                I didn't notice it here in their ingress  
                    checklist that is why I was quering that.

HOU                ECOM here thinks he will. Let it alone any-  
                    way, we'll talk to them over the states about  
                    it.

HAW                Okay.

S/C                Hawaii, 11.

HAW                Go ahead.

S/C            Okay, we shut off the repress, we're at  
              4.8, we'll let the regulator top it off.

HAW            Okay, we concur.

S/C            Boy is that feeling good to get that pressure  
              off.

HAW            I bet it does. We have about a minute before  
              LOS, we'll standby.

S/C            Okay, what's next on the schedule for us  
              we hadn't looked at the flight plan yet.

HAW            Lets see, you got all your post ingress  
              procedures, then you have to purge.

S/C            Is that over the states?

HAW            That's over Carnarvon.

S/C            Excellent, excellent.

HAW            Hawaii has had LOS both vehicles. All systems  
              GO at LOS.

CAL            California has contact.

FD            California go remote.

CAL            California remote.

END OF TAPE

HOU Gemini 11, Houston at California. Over.

S/C Gemini 11, Houston. We're just going through our first ingress.

HOU Oh, roger. We have a ninth depth L-band test procedure for you when you're ready to copy. Over.

S/C Okay, wait one.

S/C Okay, I'm ready to copy.

HOU Okay, Gemini 11. Just prior to undocking we'd like to have you in the following configuration: have the L-band at stand by, five minutes prior to undocking; have your computer in NAV; turn on the Agena transponder, that's 071; and then turn your encoder off. After that the ground will send SPIRAL SELECT and then you'll be cleared to undock. Now after undocking you want to hold a bore sight at about 20 feet separation, turn your radar on. We'll look at the antenna you're locked on for about three minutes and if you're on the SPIRAL we'll send DIPOLE SELECT. That will be from the ground. After that you'll be cleared to turn your encoder back on again and after one more minute of boresight, we'd like you to send ACQ lights on and off, 251, 250. We'd also like you to report azimuth, elevation,

lock-on range, range rate and maps. And you  
can leave your radar on for the stateside pass.  
S/C Okay. Let's be sure I got it all. L-band at  
stand by, five minutes. Prior to undock, com-  
puter in NAV and tie up the L-band in the Agena,  
071 and then turn the encoder off. The ground  
will select spiral. Dock out, undock 20 feet,  
the radar on and we'll look at it for three  
minutes. And the ground will select dipole  
and we can turn our encoder on and look for one  
more minute. And then you want us to send acq  
lights on, acq lights off, 251, 250. And after  
that you want a report on the azimuth, elevation,  
range, range rate and maps.

HOU Roger. That's correct and we have a node update  
for you.

S/C Roger, wait one.

S/C Go, ready to copy.

HOU Roger, node 49:36:55, rev 31, 135.5 east, zero  
hours, 53 minutes, right Ascension.

S/C You're fading from me. Say again the longitude  
and the local.....and right Ascension.

HOU Guaymas remote, California local.

GYM Guaymas remote.

HOU Gemini this is Houston through Guaymas. Did  
you read?

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HOU Texas local.

TEX Texas local.

HOU Gemini 11, Houston. Over.

S/C Go ahead.

HOU Roger, could you check your biomed circuit  
breaker? Over.

S/C Yes, it is off. We will get it on in a second.  
I had it off when I changed the stand up cable.

HOU Roger.

S/C It is on.

HOU Gemini 11, Houston. Over.

S/C Go ahead.

HOU Roger. Can your A-pumps? Over.

Both A-pumps? Over.

S/C Primary A is on and Secondary B is on. Okay  
A is on and the primary D is on primary. Do  
you want to put the other A-pump on?

HOU Roger, you are fully powered.

S/C Say again.

HOU Roger. You are powered up. Over.

S/C Okay, we will put the A on the secondary.

GTI LOS Turk.

HOU Gemini 11, Houston one minute and 20 seconds  
to LOS at Antigua.

S/C Roger, I have the feeling we are a little bit  
behind. We will see how we progress and we will

Gemini Control, 49 hours, 36 minutes into the flight.

Gemini 11 is over New Guinea on its 31st revolution. We have the tapes of the passes through Ascension, Tananarive and Carnarvon. We'll play those for you now.

S/C Houston, this is 11.

HOU Gemini 11, this is Houston at Ascension standing by.

HOU Gemini 11, Houston at Ascension standing by.

S/C Hello, can you read me?

HOU Gemini 11, Houston. Did you call?

S/C Yes. We're going to hate to leave this Agena. It's been pretty kind to us.

HOU Say again.

S/C I say we're going to hate to leave this Agena. It's been pretty kind to us.

HOU Sure has.

S/C For ground information at seven seconds, the primary propulsion - three minutes and 19 seconds of secondary propulsion and 43 percent energy fuel.

HOU Roger.

HOU Tananarive go remote.

TAN Tananarive remote.

S/C Houston, Gemini 11.

HOU 11, Houston. Say again.

S/C Oh, roger. We have .... dropped off on our electronic timer. Could you give us a GET

time hack?

HOU Roger. We'll give you one. In about 45 seconds  
it will be time 049:11:00.

S/C Roger.

HOU Okay, about 30 seconds now.

S/C Roger, understand. 49:11:00. Call us down,  
please.

HOU Roger. 10 seconds. 5, 4, 3, 2, 1 Mark.  
49:11:00.

S/C Give us a hack at 10.

HOU We missed it. We can try for 20.

S/C Can you make it 15?

HOU 1 Mark. That was 20 seconds.

S/C Want to align the course?

HOU Roger. We'll go all the way to 49:12:00.  
15 more seconds. 10, 9, 8, 7, 6, 5, 4, 3, 2,  
1 - Mark. 49:12:00.

S/C We're with you.

HOU Roger.

S/C Houston, 11.

HOU Go ahead, 11.

S/C I can't get any maps on the Agena unless I  
turn the L-band on. And then when I turn the  
L-band on everything seems to be okay.

HOU Roger, understand. You can't get commands in  
unless you turn the L-band on. And when you

do, everything's okay. Is that correct?

S/C Well, at least I don't get any maps back. We  
couldn't get the SDP to turn off so that's  
correct.

HOU Roger, 11.

HOU 11, Houston.

S/C Go ahead.

HOU Did you say that when you do command the SDP  
on and you do not receive a map light the SDP  
in fact does come on?

S/C That's negative. It was on and I tried to com-  
mand it off and it wouldn't go off so I had to  
turn the L-band on to get anything into the  
Agena at all.

HOU Understand. Gemini 11, Houston.

S/C Go ahead.

HOU Could you turn the L-band off and then cycle  
the arm stop switch and check the results?

S/C I've already done that and the longitude is  
correct and the arm stop switch does cycle.

HOU Roger, understand it functions with the L-band  
off.

S/C Affirmative.

S/C Houston, 11.

HOU Go ahead, 11.

S/C Now we're just still playing with it and I turned  
the L-band off and everything works okay now.

S/C Do you need a temperature in the L-band?

HOU Roger. You're just about LOS. We'll see if we can get it for you.

HOU 11, Houston.

S/C Go.

HOU Roger. We checked the temperature. It's 58 degrees which is normal.

TAN Tananarive LOS.

Telemetry solid on Agena. Telemetry solid on Gemini.

CRO Flight, Carnarvon.

HOU Go ahead.

CRO Did you copy that?

HOU Stand by.

CRO Give me a mark when you start the purge.

S/C Yeh, we're getting ready. Mark, hydrogen on number 1.

CRO Roger. And I've got a sunrise time for your tether exercise.

S/C Okay.

CRO 49:49:47.

S/C And we've got a delta P light on hydrogen that time for the first time.

CRO Roger.

S/C And we're getting it on the other one too.

CRO Yeh, we see it on the ground.

HOU Carnarvon from Flight.

CRO Go ahead, Flight.

HOU Does he have the cross over open?

CRO Is the cross over open?

S/C Yeh, its open.

OK, Carnarvon, be advised that I have turned off the auto and manual circuit breakers, retro sequence control one and two. Attitude indicator retro circuit breaker is open, and that leaves me three switches to go to jettison the tether. And that's the configuration we'll start in. Oh, excuse me, I've got the RCS squibs one and two open also.

CRO Rog. On that L-band problem you had in commanding, did that happen about the same time you had that electronic timer circuit breaker off?

S/C Yep. That's possible.

CRO Okay.

S/C I probably knocked it off when I was in the back stowage box.

CRO Rog. Did you copy, Flight?

S/C And it was also .... for by about a minute.

HOU We copy. That could have been the problem.

CRO Rog.

HOU Carnarvon from Flight.

CRO Go ahead, Flight.

HOU Ask him what he feels his concern is on this  
radar, is it a time problem?

CRO 11, Carnarvon.

S/J Go ahead.

CRO What do you think the problem is, Pete, in per-  
forming that L-band test at the same test you  
spun up?

HOU Non-spun up.

CRO The non-spun up.

S/C They say go fly in front of it at 20 feet and  
if you want and try to do<sup>it</sup>/once we get undocked -  
is that the idea?

HOU Yeh.

CRO That's it.

S/C Okay. The 20 feet was confusing me.

CRO Okay.

HOU Yeh, after he....

S/C We'll try it after we undock.

HOU After he undocks at 20 feet sep turn the radar  
on as he's moving out.

CRO After you undock and you turn the radar off as  
you're moving out.

HOU On, at 20 feet.

CRO That's turn the radar on at 20 feet.

S/C Okay.

CRO Flight, Carnarvon.

HOU Go.

CRO That circuit breaker must have been off according to my GR block. It was exactly three minutes in lagging. So I think it was off for about three minutes.

HOU Okay.

S/C Okay, oxygen down on number 1, going on number 2.

CRO Roger.

CRO One minute to LOS.

S/C Roger.

CRO And we'll see you tomorrow morning.

S/C Okay. Pretty nice day today, Bill. You guys look great from 750.

CRO You better bring the pictures back.

S/C Yeh, we got them. I hope. Go have a ... for me will you?

CRO I sure will. In fact, I might bring you guys back a couple.

S/C I'd appreciate it.

CRO Carnarvon has LOS both vehicles.

CRO Flight, Carnarvon.

HOU Go ahead.

CRO Did you copy that about the Delta P light on the H<sub>2</sub>?

HOU Affirmative.

This is Gemini Control, 49 hours, 47 minutes into the flight. We're about three minutes away from acquisition at Hawaii. Flight plan calls for the undocking and the tether evaluation to begin 20 seconds prior to acquisition at Hawaii. Pete Conrad could decide to hold off until he has acquisition before he undocks. We'll come back up in about a minute or minute and a half and stand by for this Hawaii pass. This is Gemini Control.

END OF TAPE

This is Gemini Control, 49 hours 49 minutes into the flight.  
We are 25 seconds away from Hawaii acquisition of Gemini 11.  
We'll standby for this pass at Hawaii.

HAW Hawaii has TM solid.

HOU Roger

HAW Intermittent TM

HAW Gemini 11 Hawaii.

S/C Roger Hawaii this is eleven. We've undocked  
from the Agena. Agena is in inertial attitude,  
down 3 degrees below local vertical and we're  
going on to tether.

HAW Okay.

HAW Roger. They're in a terrible attitude.

S/C We sort of upset the Agena a little bit with  
the tether when we undocked. He's sort of  
stabilizing back into his attitude again.

HAW Okay.

S/C The tether is not flopping at all and is  
maintaining tension very nicely.

HAW Copy.

S/C I just came on with the radar and I don't have  
any lock.

HAW Okay, why don't you go off with the radar.

S/C Radar is off.

HAW Okay, turn your encoder off.

S/C Encoder is off.

HAW Okay I am going to ~~command~~ fire on antenna from the ground.

S/C Roger.

HAW Okay we're cycling you here. Let's hold it there for a minute.

HAW Okay, do you want to turn your encoder on.

S/C Encoder coming on.

HAW Turn on the radar.

S/C This figure is starting out a little bit poorly for the - then spun up because .....I just got to the end of the tether there is suppose to be a (garbled)

HAW Okay Flight, he's/<sup>locked</sup> on the diapole antenna.

HOU Roger

S/C Okay, it's hung up in the back now. We didn't get it all out we only got about 50 feet out and I jerked it a little bit. We'll try it again.

HAW Okay.

S/C This is really wierd.

HAW I'll bet.

HAW Have you got your OAMS cut off for this  
exercise.

S/C Say again, what is it.

HAW 10 percent

S/C Roger.

HOU Hawaii from Flight

HAW Go ahead.

HOU That leaves him enough to do the rest of the  
flight plan and experiments.

HAW Okay.

HAW 10 percent will give you enough for the rest  
of the flight plan and your experiments.

S/C Okay.

HOU Hawaii from Flight.

HAW Go ahead

HOU Just the experiments

HAW Oh, just the experiments.

Roger.

HOU Hawaii from Flight

HAW Go ahead

HOU Did you say he was locked on the diapole?

HAW Affirmative

S/C Okay we got it to running.

HAW Say again.

S/C We got it coming out free the rest of the way.

HAW How about having Dick send that acq lights  
on and off.

S/C Say again.

HAW How about having Dick send acq lights on  
and acq lights off.

S/C Okay. They are on.

HAW Okay.

S/C They came on and they went off and I have  
no map.

HAW Both ways.

S/C That's affirmative. Both ways. No map but  
I do get the acq lights.

HAW Okay.

S/C We're ten feet from the end.

S/C Oh man, I really upset the Agena. I can't -  
I haven't got the end on the swivel yet. I  
hit it very lightly and it just really upset  
the Agena so I'm not even going to be able  
to start the non spun up.

HAW Okay we copy that.

HAW Flight do you want them to go right into the  
spun up?

S/C Oh, I see what's the matter. It's hung  
on the handle, the right handhold handle.

HOU Hawaii from Flight.

HAW Go ahead.

HOU That is up to him. If he determines he  
can't start it.

HAW Okay.

HAW Okay 11, if you feel like you can't do the  
non spun up business and you want to start  
the spun up exercise you can have at it.

S/C We are already passed the point of doing the  
non spun up.

HAW Okay, at your discretion then.

HOU Hawaii from Flight.

HAW Go ahead.

HOU The ACS off.

HAW Negative it is on.

HAW We have a minute to LOS, what is your plan?

HOU Hawaii from Flight.

HAW Go ahead.

HOU Remind him to - you might remind him of ACS off  
before he starts to spin.

HAW Roger.

HAW            11 Hawaii. Don't forget the ACS off command  
                 before the spin.

HAW            He may have caught that Flight. I don't know  
                 how we stand for LOS.

HOU            Roger.

HAW            We've had LOS, all systems were GO at LOS.  
                 The ACS was still on.

This is Gemini Control, 49 hours 59 minutes into the flight.  
We'll continue to follow Gemini 11 through the stateside pass,  
we'll standby to pick it up at California.

FD            California go remote.

CAL            California is remote.

END OF TAPE

HOU 11, this is Houston, go ahead.

S/C OK Houston. This thing is hot on the handle  
out here. I'm going to go ahead and try and  
spin it up. I can't get it off the handle.

HOU Roger. Is your CS off at this time?

S/C Say again.

HOU Is your ACS off at this time?

S/C Yes.

HOU Roger.

S/C Would you see if our ACS is off, ground.

HOU We'll check on it, 11.

S/C Now about this (garb)

HOU Roger, and we're not going to get any data until  
Texas.  
11, Houston. Like to recommend that you stand  
by until over Texas where we can verify ACS  
off.  
11, Houston. Do you still have lock-on?

S/C We never had a lock-on light.

HOU Roger.

Unknown Guaymas remote, California local

Unknown Guaymas is remote, California is local.

S/C Houston, 11.

HOU Go ahead 11.

S/C Roger. The nylon tether is completely free at  
this time.

HOU Ah, roger.

S/C It's not stuck to the handle of the docking cone,  
it's only at the turn-patch point.

HOU Roger. We show your radar locked on to the  
Agena, but apparently the Agena information  
isn't getting back to you.

S/C No I lost it cause I can't send the AC lights  
on and off.

HOU Roger.

S/C I don't even think I'm going to be able to get  
it started spinning; I had ACS off I guess, and  
got some rates into it and am having a hard  
time station keeping on it. I can't really  
psyc out what's going on.

HOU Roger.  
Gemini 11, Houston. Suggest you turn ACS back  
on at this time. That would be command 401.

S/C Roger. I'll check it.

HOU Roger.  
Stand by to turn it off when we get some more  
information. Get data in Texas.

S/C Roger. Yeh, but three did have some motions  
and the ground going by and the tether whipping  
around, I'd really have had a hard time figuring  
out who would have gone first.

HOU Roger.

S/C I've hit the end of it a couple of times  
inadvertently, left a big bow in it, but  
all of a sudden (word garb) you know you're  
at the end of it.

HOU 11, Houston. We indicate that your ACS is on.  
You can send ACS off and 400 when you're  
ready.

S/C Roger, understand.

Unknown Texas remote, Guaymas local.

Unknown Texas remote, Guaymas is local.

S/C This tether is doing something I never thought  
it would do. It's like the Agena and I have  
got a skip rope between us and it's rotating  
and making a big loop, and I got things pretty  
well under (word garb) now and it looks like  
we're skipping rope with the thing out here.

HOU Roger, and we still indicate on the ground  
that the ACS is on.

S/C We're trying to get to the end of the tether.  
We're getting there slowly.

HOU Roger.

S/C Man, have we got a wierd snarlin' job going here.  
This will take somebody a little bit to figure  
out. The tether is still doing this spin like  
I say, and that's the reason I can't get  
the end of it, because it keeps a bowing it while  
its spinning it and it has tension in it.

HOU Roger.

S/C I can't get it straight.

HOU Gemini 11, Houston. We indicate you've used  
approximately 40 pounds of fuel. Could you  
give us a PQI reading if possible?

S/C Roger. 22 percent.

HOU Say again.

S/C Roger. It's 22%.

HOU 22.

S/C Roger.

END OF TAPE.

HOU 11, Houston consensus here is that you will never be able to get the spin the tether out by applying tension to it and using your own judgment, if you desire you can initiate the spin from this point.

S/C Roger, it is down right now, and we are getting in position to do the spot on station keeping right now. It is out of it.

HOU Good.  
Texas local.

S/C Houston. Watch it. Let me know if I get ACS on again there.

HOU Roger. 11, Houston. We still show ACS on here.

S/C Roger, we are just getting a buzz right now.  
Man, this towing is a job. Is ACS off?

HOU Roger, we confirm it off.

S/C Roger, thank you. Well, we started it.

HOU Roger. 11, Houston, do you have an tension in the cable at this time?

S/C Negative. As soon as I backed off and down it stopped. And a lot of slack in it.

HOU Roger.

S/C Hey, this is not going to work. As a matter of fact, - well, I will wait and see. Hang on. Here goes the jerk. Boing.

S/C Well, the tension must be extremely light because we can't even hardly feel it. But we did hit the end of it so by golly, we are oscillating.

HOU Houston roger.

S/C Hey, I will tell you what though. Once this thing settles down a little bit more on that gyro, it will whistle over the night side, it looks like.

HOU Roger. Did you put full thrust down? To initiate?

S/C Either side right now.

ANT LOS Antigua.

S/C Well, it seems to be settling down. We are spinning after a fashion. As best as I can determine we got sent up about 45 degrees out of the orbital plane.

HOU Houston, roger.

S/C Al, check and see if I don't have the running lights on. I think I do.

HOU We will check. Hey - 11, Houston. Your running lights are on. We show you with approximately 200 pounds of propellant remaining.

S/C Good. Actually, I am quite surprised. We

S/C                    had a great deal of slack in the tether when  
we - tied up a time or two. But the tether  
seems to be - have kinds of tension in it,  
like we really are spinning.

HOU                    Roger, could you give us PQI?

S/C                    It looks like about 21 percent.

HOU                    Roger. 11, Houston, we show you 27 minutes  
from sunset. 11, Houston. Could you give us  
a feel for how your spin is progressing now?

S/C                    I think it is really settled down, the attitudes  
haven't, but we apparently have constant pitching,  
to the tether. We have only lost sight of him  
once. And what he is doing is - we've wound  
up so that our dispersions are mostly in yaw.  
And he is yawing to oh, 30 to 35 degrees in  
either side of us. We have rolled about 90  
degrees to him right now. The tether is  
maintaining tension at all times. Didn't  
think - first started.

HOU                    Roger. How do you feel now about going into  
sunset in it spun up?

S/C                    Goes right ahead, we will press on. It might  
be some damping in the tether because we got  
a good 6 feet of slack right after I let go  
of it. It may be that there is a bit of

S/C                   some elasticity to the tether.

HOU                   Roger.

S/C                   It is damping down considerably. I believe  
                          have  
                          that we/damping.

HOU                   Houston, roger.

GTI                   LOS Turk.

HOU                   11, Houston. 30 seconds from LOS.

S/C                   We will press on. We have got a lot of  
                          tension; here goes the acid test. It is  
                          going on her nose now. We have got a lot  
                          of tension. Good steady tension. I can't  
                          even feel it oscillating. It looks like  
                          we have got a good spin going, so that it  
                          is going to hold it.

HOU                   Roger. Is it still 40 degrees or so out of  
                          the orbital flight?

S/C                   The Agena pulls us with respect to the  
                          tether is very low, but the Gemini motion  
                          with respect to the tether - we are the  
                          ones that have all the motion. It seems to  
                          me we are doing 48 degrees, plus or minus.  
                          Right now we are just about - we are only  
                          flying 30 degrees or so out of the orbital  
                          plane. I can't really tell...

HOU                   LOS, 11.

GEMINI 11 MISSION COMMENTARY, 9/14/66, 10:53 AM TAPE 196 PAGE 5  
Gemini Control 50 hours 22 minutes. We have had LOS at Antigua.  
Gemini 11 coming within range of the Rose Knot tracking ship  
at 50 hours 24 minutes 17 seconds. It will pass directly from  
there into Ascension range for a brief time. We will pick up  
Gemini 11 again at the Rose Knot. This is Gemini Control.  
END OF TAPE

This is Gemini Control at 50 hours 24 minutes into the flight.

RKV is putting in a call to Gemini 11.

S/C 11 here, everything is going okay.

RKV Roger we'd like to know what the period of spacecraft oscillation is? If you have any estimate.

S/C The rate is around - I didn't get the oscillation but the rates were about 1 degree per second going out and they've jammed. I'd say they are down to about a half degree per second. The whole thing is beginning to stabilize out pretty well.

RKV Real good. Mighty fine. Glad to hear that. We'd also like to know if you got an indication of the analog range or range rates.

S/C The analog is showing 00 at 300 000.

RKV Roger copy. 0 0 at 300 000.

S/C Say again RKV.

RKV Roger I copy 0 0 - 300 000.

S/C Yes both the range rates are zero and the range needle is (garbled) at 300 000 feet.

RKV Okay very good. Thank you.

S/C Vigital range is 120 on the computer.

RKV Digital range 120 on the computer.

S/C Hey I got a question them in Houston. Will you  
tell them that we've been using the 16-mm  
movie camera with an 18-mm lens in it and  
I've gotten about - well I got all of  
this, the camera has been on all the time  
and I was wondering if they want us to  
change to the 75-mm lens or keep on with the  
18.

RKV Roger, we'll check with them.

RKV Flight do you copy.

HOU We copy.

HOU RKV from Flight

RKV Go Flight.

HOU Stay with the 18.

RKV 11, RKV. You can stay with the 18.

S/C Okay.

HOU RKV from Flight.

RKV Go Flight

HOU Send us some OBC's.

RKV Roger

HOU RKV Houston Flight

RKV Go Flight

HOU Ask him if he can estimate how long it takes him

go from peak to peak on his oscillations.

RKV 11, RKV. We'd like to know if you can  
estimate how long it really takes you to go  
from peak to peak on your oscillations.

S/C Okay. We'll start timing these good things  
here (garbled)

RKV Okay.

S/C RKV, 11.

RKV Go eleven.

S/C The oscillations seem to be a little bit  
random. We keep getting coupled in a different  
axes and it's rather hard to sort them out.  
We also figure that there is probably some fuel  
sloshed around in the Agena. Maybe - which  
is doing it.

RKV Roger, copy.

RKV Are you getting the air to ground transfer ok.

HOU That is affirmative.

RKV Roger.

S/C We're having oscillation about 50 seconds.

RKV Copy, having oscillation about 50 seconds.

RKV 11 RKV. We have about one minute to go.

S/C Okay, we'll press on.

RKV Roger

HOU RKV from Flight.

RKV Go Flight.

HOU Ask him if can try to estimate his rotation  
rate and we'll pick him over Ascension or  
Tananarive.

RKV They would like to know if you can estimate  
your rotation rates and they'll pick this  
information up over Ascension or Tananarive.

S/C Say again.

RKV They'd like to know if you can estimate  
your rotation rates and they'll pick you  
up over Ascension or Tananarive.

S/C All right, we'll try but we<sup>can</sup>/get coupled up  
so badly that I can't really tell which way  
we're spinning.

RKV Okay.

RKV Flight we've had LOS both vehicles.

HOU Gemini 11 Houston. We're standing by for your  
estimate of your rotation rate.

S/C Do you want the spin rate we have?

HOU 11, Houston. Say again.

S/C I 'm having a hard time pulling it out now.  
I have great roll rotation, the two vehicle

rotation is very low.

HOU

Houston, roger.

S/C

I see the ground going by....the orbital  
plane it really screws you up. It's very  
hard to (garble) this.out.

HOU

Roger

HOU

11 Houston. Our ground information indicates  
from Agena that it's about 40 degrees per  
minute.

S/C

40 degrees per minute, okay.

END OF TAPE

HOU Gemini 11, Houston. Thirty seconds to LOS.

S/C Roger

This is Gemini Control, 50 hours, 37 minutes into the flight. Ascension has just lost signal from Gemini 11.

To recap a bit, the Agena Systems Flight Controller here on the ground estimates the rotation rates in this span at

40 degrees a minute, or it would take about nine minutes for

a complete revolution. The next station to acquire will be

Tananarive at 50 hours, 45 minutes, 21 seconds. We'll come

back then and pick up Gemini 11. This is Gemini Control.

END OF TAPE

This is Gemini Control, 50 hours, 45 minutes into the flight. Gemini 11 has just started the nightside of its 32nd revolution and we're just about to pick up at Tananarive. We'll stand by there.

TAN Tananarive AOS.

HOU Tananarive remote.

TAN Tananarive remote.

HOU Gemini 11, Houston. We're standing by.

S/C Roger. Everything's going just fine.

S/C Houston, 11.

HOU Go ahead, 11.

S/C Roger. The Gemini is yawing at about, oh, two thirds of a degree per second and the highest pitch or yaw rates that we're seeing right now with a couple are also about two thirds of a degree per second.

HOU Houston, roger. Two thirds of a degree per second in both cases.

S/C It's very evident that the back of the tether is on the docking bar. I got from CG that this is advantageous for us in that the Agena motion is staying out in front of our windows all the time and therefore, it's very seldom that we lost sight of it.

HOU Roger. For your information if you wanted to use that 75 millimeter lens you should hand

hold the camera.

S/C                    Okay. I don't think that will be necessary.  
  
We've gotten good pictures and the 18 will give  
you a wider field of view and I've got one old  
magazine and one frame per second now and I plan  
to run another one on the next day pass.

HOU                    Roger.

(PAUSE)

HOU                    Gemini 11, Houston. We're about one minute from  
LOS.

S/C                    Roger, Al. We're settling down here pretty well,  
as a matter of fact. You'll have us going to  
sleep on you. Matter of fact, think I will.

HOU                    Roger.

TAN                    Tananarive LOS.

Gemini Control at 50 hours, 53 minutes. We've had LOS  
at Tananarive now. Both Pete Conrad and Dick Gordon reporting  
this tether exercise going very well as they're still on the  
nightside of this pass. Ground track of Gemini 11 passes north  
of Carnarvon within the next few hours. So the next station  
to acquire will be the Coastal Sentry tracking ship out in the  
western Pacific. Gemini 11 due there at 51 hours, 9 minutes,  
12 seconds. This is Gemini Control.

END OF TAPE

This is Gemini Control at 51 hours, 9 minutes. Gemini 11 still in the night cycle, coming up on the Coastal Sentry now and we'll listen there.

CSQ                Our TM is real spotty.

Gemini 11, CSQ.

S/C                Go ahead.

CSQ                Roger. Could you give us a readout of address 35.

S/C                Address 35 coming up, (garbled)...099

CSQ                Say again, eleven.

S/C                Roger, address 35 is reading 09999, ....just a bunch of garbage, over.

CSQ                Roger.

Copy, Flight?

S/C                (Static)..our radar in here, and it tried to lock, and ....intermittently for...(static) ....20 minutes ago, and 10 minutes ago... (static) so we must have had some sort of .....in our onboard radar. Can you confirm that?

CSQ                Stand by, I'll check.

Did you copy that flight?

HOU                CSQ from Flight.

CSQ                Go ahead.

HOU                We think it is in the Agena transponder right now.

CSQ Roger.  
Eleven, CSQ  
S/C Go ahead  
CSQ They seem to feel that it's in the Agena  
transponder.  
S/C Okay, now the Agena is up and to our left  
and the address shows that it's up and the  
elevation shows that it's (garbled) up  
and apparently we have some sort of infor-  
mation going through our radar. Our radar  
needles are nulled and we seem to be getting  
some sort of lock also.  
CSQ Roger, copy.  
CSQ Flight, CSQ  
HOU Go ahead  
CSQ Okay our TM is still real ragged. I don't  
know whether you are getting any good information  
out of our summaries or not.  
HOU Roger. Are you sure lock on.  
CSQ Affirmative  
HOU Check Hotel 331.  
CSQ It's showing zero.  
HOU Say again  
CSQ Hotel 331 is showing zero.  
HOU Roger.

HAW            Okay the feeling is as far as stopping the  
                 spin they feel you should probably just  
                 jettison the bar and that will get it out  
                 one or two feet per second separation.

S/C            What are you saying?

HAW            Rather then just try and stop the spin,  
                 just jettison the index bar.

S/C            You want us to just jettison the index bar  
                 when we are ready to separate.

HAW            That is the feeling at Houston, right.

HOU            That is affirmative

S/C            Okay and you want us to spin up higher is  
                 that correct.

HAW            Okay with that three second burn is what they  
                 were thinking about.

HAW            11, Hawaii

S/C            Go ahead

HAW            Okay you can go back to nav if you want to.

S/C            Okay, I didn't get your last, you want us  
                 to spin up higher is that correct.

HAW            Roger that. Three second burn

S/C            Okay.

HAW            Hawaii has LOS

HOU            Roger

GEMINI 11 MISSION COMMENTARY, 9/14/66, 12:09 p.m. TAPE 201,  
PAGE 7

This is Gemini Control at 51 hours 34 minutes. We'll pick  
up at California momentarily and continue to listen there.

CAL                    California is remote.

END OF TAPE

HAW Houston Flight, Hawaii.

HOU Go ahead.

HAW Roger, we checked out his load. It looked good.

HOU Roger.

Gemini 11, Houston.

S/C Go ahead.

HOU We got a prephasing maneuver update for you when you are ready to copy.

S/C You guys are full of all good things, man. We are trying to ... the S there. Okay, ready to copy.

HOU Okay. The GETB is 53 24 55 Delta V 9.3 address 25 0, 0, 0 55 address 26 90075, address 27 00000. You will be using your forward firing thrusters. The maneuver will be posigrade and up. You will perform this maneuver in components prior to the maneuver align your platform BEF and get a good solid station keeping position with the Agena. The pitch attitude is included to take advantage of some network tracking. Over.

S/C This is Gemini 11 - 532455, Delta V 9.3 address 25 00055, address 26 I didn't get

S/C 27 is all zips, forward firing thrusters.  
Posigrade up. Align station keep and do  
it peachy keen. Give me address 26 again.

HOU Roger. 26 90075.

S/C Roger, understand 90075. Is that affirmative?

HOU Guaymas remote, California local.

GYM Guaymas remote.

CAL California local.

S/C Hello Houston.

HOU Houston. Standing by.

S/C You just ruined a good thing.

HOU What does it look like now, 11?

S/C It is wild. Here we are nice and steady.  
Yes, we have about a 60-degree attitude changes  
on evening. The tether went way slack and we  
banged off the end of it.

HOU Roger, are you getting oscillations in yaw  
and pitch both?

S/C Yes, we have got oscillations everywhere.  
How does it look down there? Kind of tame,  
I'll bet, huh? I suspect that it will damp,  
but it sure is wild.

HOU Are you all skipping rope up there now?

S/C No, we have the tether tight again, but the  
attitudes are pretty good on both the Agena  
and the Gemini.

We have a bit of interesting information from the Agena Systems Engineer, Mr. Robert Carlton. He calculated during this initial stabilized spin before we speeded up the spin, that the gravity rate in Gemini 11 was .00015. Mr. Carlton says that in this gravity if the pilots let go of their camera, it would fall three inches in 10 seconds. This is Gemini Control.

END OF TAPE

HOU Roger, everything is okay down here, we are  
all on the ends of these 3-foot ropes.

S/C Okay. Yes, that is something nobody thought  
about, but by golly if you spin a rope and pull  
it tight, it applies tension and that is exactly  
what has happened to us. Why I couldn't get  
started right away. Everytime I backed off,  
the rope would spin faster and get tension in  
it and then it would jerk the Agena. What  
time is our next sunset?

HOU Wait one.

GYM Guaymas has LOS.

HOU 11, Houston. About 28 minutes, 52 13.

HOU Texas remote, Guaymas local.

TEX Texas remote.

HOU 11, Houston, did you copy your sunset time.  
About 28 minutes.

S/C Okay, I tell you what I am doing right now.  
I am in pulse and I tried to damp the Gemini  
rates a little bit.

HOU Roger.

11, Houston. We are just about at LOS.

This is Gemini Control 51 hours 46 minutes into the flight.  
We have had LOS at Texas. The next station to acquire will  
be the Rose Knot down off the east coast of South America.  
Acquisition time there 51 hours 59 minutes 9 seconds. This is  
Gemini Control.

END OF TAPE

This is Gemini Control, 51 hours, 59 minutes into the flight. We're just about to acquire at the Rose Knot.

RKV It's locked in now. All vehicles go.

HOU Roger. We're reading you very broken.

RKV Roger.

RKV Gemini 11, RKV.

S/C Hello RKV, Gemini 11 here.

RKV Roger. We're showing the encoder as being off at the present.

S/C Rog. It's off.

RKV Okay. You can turn it back on.

S/C Okay.

RKV Roger, we have it.

S/C This last pass I guess we didn't get it back on. I was telling Houston that it got pretty wild there so I just let back the <sup>pulse</sup> and damped the Gemini rates and that killed the whole system down and it's real stable again. I guess we're rotating slightly faster. Can you read out on the Agena and tell us.

RKV Roger. We'll do a good check on it for you shortly.

RKV It sounds like damping the rates on the Agena stabilizes the whole system. Is that correct?

S/C I was damping the rates on the Gemini and it stabilized the whole system.

RKV Oh, roger.

S/C Yet the Gemini always, for some reason, has had wilder attitude/<sup>dispersions</sup> in the beginning than the Agena did, and the same way this time. The Agena stayed relatively stable but the Gemini seemed to wind up for some reason.

RKV Flight, RKV.

HOU We're copying.

RKV Okay.

RKV Okay, 11. Looking at the rates here on the ground there are two axes on the Agena and we're having a little problem coming up with anything definite for you.

HOU RKV, Flight. Send us an Agena main.

S/C We fired about four seconds aft and four seconds down or so on this last one so we should have added more to it. I can't really tell myself.

RKV Roger.

HOU RKV from Flight. Send us a main Agena.

RKV It's on the line, Flight.

RKV 11, RKV. We're unable to get you anything on these rates from the ground. We'll look at the data post-pass and maybe get some better idea of it.

S/C Okay.

RKV                Sorry about that.

HOU                RKV, give us another Agena main.

RKV                Roger.

RKV                11, RKV. We'll have LOS in about 30 seconds.

S/C                Roger, RKV. See you next pass.

RKV                Roger.

Gemini Control at 52 hours, 8 minutes. Gemini 11 is out of RKV's range now. Tananarive will pick the spacecraft up at 52 hours, 20 minutes, 43 seconds. This is Gemini Control.

END OF TAPE

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Gemini Control 52 hours 20 minutes and we are acquiring at Tananarive and we will listen there.

HOU Gemini 11, Houston.

S/C Hi there Houston, Gemini 11. Go ahead.

HOU Roger, how is it going up there, Pete.

S/C Well, I think we found the secret to success is to damp the Gemini rates and the high rotation that we acquired were very stable and as soon as I took out the large dispersions - the whole combination settled down and we are quite stable again. As a matter of fact we are eating.

HOU Roger, we got some information for you for after tether jettison. Are you ready to copy?

S/C Wait one. What kind of information is it?

HOU Roger. We have got a - two types - got one a procedure to execute the minute you jettison the tether. By that we mean send command 401 which is ACS on to the Agena and as soon as possible after that close to a station keeping position in line BEF.

S/C Okay, that was our plan, Al. We were going to wait until we got into the day side to

S/C                pick the Agena up on the horizon. At the  
                  same time we were going to ACS on forward  
                  until we get the slack off the tether, pull  
                  the bar stop the rate.

HOU                Roger. We also have another procedure to  
                  checkout radar prior to and during Agena SEP.  
                  Are you ready to copy? It is about 5 or 6  
                  steps.

S/C                Hold just one.

HOU                Roger.

S/C                Okay, we are ready to copy.

HOU                Roger, 1 is, after you complete the platform  
                  alignment, put your computer in NAV, turn  
                  on the radar and the transponder. Next perform  
                  the rerendezvous posigrade SEP burn on schedule.

S/C                You are breaking up. Could you start at the  
                  beginning again?

HOU                Roger. Step 1, after you complete the platform  
                  alignment, put your computer to NAV, and turn  
                  on the radar and transponder. Did you copy that  
                  much?

S/C                Yes.

HOU                Okay, step 2, perform rerendezvous posigrade SEP  
                  burn on schedule.

S/C                Roger.

HOU                    When you are over Hawaii, they will ask you  
                         to send spiral select, which is command 270.  
                         Then they want you to boresight on the Agena  
                         for 2 minutes and send acq lights off, which  
                         is command 250 and on which is 251. Did you  
                         copy that part?

S/C                    Roger.

HOU                    Roger. When that is complete go to the  
                         platform mode. When you are over the CSQ  
                         they will ask you to send dipole select,  
                         which is command 260. Then they want you to  
                         boresight on the Agena for one minute and  
                         send acq light off and on again.

S/C                    Roger.

HOU                    This completes the procedure and you can  
                         continue then normal flight plan.

S/C                    Roger.

HOU                    Gemini 11, Houston.

S/C                    Go Houston.

HOU                    Roger, about a minute from LOS. We have been  
                         discussing your procedures for separating from  
                         the Agena. And we would like to suggest that  
                         you not get too much slack in the tether prior  
                         to the time you blow the bar. Over.

S/C                    My plan is to go 401 just as soon as we have

S/C                    the least little bit of slack and I am going  
to jettison at the same time.

HOU                    Roger, we concur.

S/C                    Okay. A very fine streak of lightening.  
Al, on this separation burn, what thrusters  
did you want to use on this?

HOU                    Say again, 11.

S/C                    Which thrusters on the separation burn?

HOU                    Roger. You will BEF and you will be using  
your forward firing thrusters.

S/C                    Roger. BEF forward firing. Thank you.

HOU                    11, Houston. I guess you will be doing  
that in components.

This is Gemini Control 52 hours 29 minutes into the flight.  
Gemini 11 out of range of Tananarive now. The next station  
to acquire will be the Coastal Sentry tracking ship. Acquisi-  
tion there at 52 hours 43 minutes 29 seconds. This is Gemini  
Control.

END OF TAPE

This is Gemini Control, 52 hours, 43 minutes. We're standing by. The CSQ should acquire Gemini 11 any moment.

CSQ Houston Flight, CSQ Cap Com.

HOU Go ahead.

CSQ Okay, we have TM on both vehicles. Both vehicles are go.

HOU Roger.

CSQ 11, CSQ Cap Com.

S/C Roger, CSQ. Gemini 11 standing by.

CSQ Roger, we have nothing for you. We'll be standing by.

S/C Roger.

S/C CSQ, 11.

CSQ Go 11.

S/C Roger. We've been kicking this station keeping around and the way this thing looks now we both have the decided impression that the non-spun-up station keeping would probably work also if you keep it in electronic. Now we just got past the point of no return there when we couldn't get the tether off that handle and we got a little wrapped around the axel there but I kind of been thinking that that also would work if you give it enough time and you set it up before you release the two vehicles.

CSQ Oh, roger. Copy.

CSQ Did you copy, Flight?

HOU We copy.

CSQ 11, we have about a minute to LOS. Standing  
by.

S/C Roger. We're just coming out into the sunlight  
and we're getting ready to stop the station keeping.

CSQ Oh, roger. Copy.

Gemini Control at 52 hours, 52 minutes. Gemini 11 out  
of range now at the CSQ. We'll come up on Hawaii 53 hours,  
one minute, 58 seconds. The jettisoning of the tether sched-  
uled between the CSQ and Hawaii. Command Pilot Pete Conrad  
reporting over the CSQ that he believes that the non-spun-up  
station keeping will work too if given enough time. Agena  
Systems has calculated the revolution rate since the crew  
added that one foot per second to the spin. Now calculates  
the rate at 55 degrees per minute; the initial rate was  
40 degrees per minute. This is Gemini Control at 52 hours,  
53 minutes.

END OF TAPE

Gemini Control at 53 hours 1 minute and Hawaii is  
acquiring Gemini 11. We'll standby through this pass.

HAW Intermittent TM at Hawaii

HAW Gemini 11 Hawaii

S/C This is 11 go ahead.

HAW There I got both of you. I have an update  
to your prephasing maneuver.

S/C Okay go ahead

HAW Okay. GETB 53:24:56, delta V 8.8, core 25  
00 05 1, core 26 90 07 1, core 27 zip,  
thrusters forward, maneuver is posigrade up.

S/C This is Gemini 11. Copy 53:24:56, delta V  
8.8, core 25 00 05 1, 26-90 07 1, 27-zip,  
forward thrusters, posigrade and up. Over.

HAW That is affirmative.

S/C Roger.

S/C We've got loose of this Agena. It's got  
a hundred foot tether flying all over the  
place and we're aligning the platforms,  
station keeping. We left it with the engine  
forward and upside down. We'll square it  
away for you while we're sitting here aligning  
the platform.

HAW Okay.

HOU Hawaii from Flight.

S/C Don't want you to have to work too hard down there, understand.

HOU Hawaii from Flight

HAW Go ahead Flight

HOU Ask them to leave it alone. We would like to-  
we kind of wanted it in that position to  
start with to do this radar test. Leave it  
alone.

HAW Okay.  
Eleven, Hawaii

S/C Go

HAW You've been requested to leave the Agena alone.

S/C Oh, don't think I can handle it huh.

HAW We really think you can handle it all right,  
it's just that we want to kind of try it out  
with this radar test we are about to perform.

S/C Roger.

HAW I have one more little update for you.

S/C Go ahead.

HAW Okay, at 53:11:00, C adapter to continuous.

S/C Roger

HOU Hawaii from Flight.

HAW Go ahead

HOU Ask him if he could describe the separation.

HAW Okay

HOU As it occurred.

HAW How about giving us a little run down on that separation, or that jettison of the tether.

S/C Roger. What we did is get it on the horizon, we went ACS on, rate command fired up and forward to stop the translation and I hit the jettison switch and nothing happened. I hit it again and it blew. All switches were set, I don't know why it didn't fire the first time. Everything is stopped real good, the Agena control system stopped it right away and we got squared away without using too much fuel. We are station keeping BEF platform aligning right now.

HAW Okay we copy that.

S/C The tether is just slowly sailing around all the way out to 100 feet one way and then all the way back 100 feet the other way.

HOU Hawaii from Flight.

HAW Go ahead

HOU Did you remind him about this test that the RKV will pick up .....

HAW Roger.

HAW Eleven this is Hawaii. That update that they  
gave you over Tananarive in regard to this test,  
they implied that Hawaii was going to tell you  
to send spiral select, it will be RKV instead.

S/C Roger.

HOU Hawaii from Flight

HAW Go ahead

HOU Would you ask him to put the Agena in SC-1?

HAW Roger.

HOU And verify it.

HAW SC-1

HOU When you verify it.

HAW Say again.

HOU And you verify it on the ground please.

HAW Roger.

HAW Eleven Hawaii

S/C Go

HAW Roger. Do us a favor and put the Agena in SC-1.

S/C Roger.

S/C Your word is my Agena command.

HAW Can't do without you Dick.

S/C How about checking it for me because I didn't  
get a map on anything. See if that stuff is  
in it.

HAW Roger. Everything is okay, thank you much.

S/C Okay.

S/C The tether is slowly wrapping itself around  
it like a Christmas present.

HAW You make it sound so dramatic Pete.

S/C Wait until you see the movies.

I think I am just about out of film though.

It wrapped itself around one end then it wrapped  
itself around the other end and then slowly  
wrapping itself around the big engine there.

HAW Let's hope it doesn't go around the horizon  
sensor.

S/C No it's clear. They are both clear.

HOU Hawaii from Flight

HAW Go ahead

HOU LOS main on Gemini

HAW Roger. It's on the way.

HAW Hawaii has had LOS all parameters. All systems  
go at LOS.

Gemini Control at 53 hours 11 minutes. Hawaii has had loss of  
signal. Gemini 11 now begins a long sweep down over the Pacific  
towards South America. Will not be in contact with the track-  
ing station until the Rose Knot over on the east coast of  
South America. Acquisition time there 53 hours 35 minutes

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22 seconds. This prephasing maneuver<sup>in</sup>/which the Gemini will  
separate from the proximity of the Agena is scheduled at  
53 hours 24 minutes 56 seconds. That will occur before  
acquisition at the RKV, an 8.8 foot per second burn. This  
is Gemini Control, 53 hours 11 minutes into the flight of  
Gemini 11.

END OF TAPE

This is Gemini Control 53 hours 35 minutes into the flight.

Gemini 11 is coming up on the Rose Knot tracking ship now.

We will listen through this pass.

S/C Hello, RKV, Gemini 11.

RKV 11, RKV.

S/C Roger. We have your Agena in sight. It is below us a couple of miles. I don't need any range or range rate information at this time. I am standing by to ... with you. (Garbled) diapole, acq lights on and off. Whenever you are ready.

RKV All right, your TM is a little bit shaky yet. Stand by please just about a minute or so.

S/C Okay.

RKV Okay, it is looking real good here on the ground. We are ready for command 270.

S/C Roger, sending 270 mark.

RKV We saw a MAP here on the ground and we also have the event confirmed.

S/C Roger, no MAP light in the spacecraft. Sending 250 and 251 after 2 minutes. Sure are looking pretty moving along that South American

S/C ground.

RKV Be advised we are on schedule for a fuel cell purge during this time, section 2 and then section 1.

S/C Roger. (Garbled)

RKV Okay.

S/C How long do you want me to ...

RKV Oh, I think they want about 2 minutes long, something like this.

S/C Okay, we are go and we are tracking.

RKV You have 1 minutes to ....., 1 to 2 minutes.

S/C Okay, what do you show now for the acq lights, on or off?

RKV We show the acq light is on at the present time.

S/C Okay, sending off mark.

RKV We confirm the acq light did come off.

S/C Roger, sending 251 mark.

RKV And the acq light did come back on.

S/C Okay, we are getting through to it I guess.

We have no radar lights and I am not receiving any MAP lights. I have no radar range or range rate. No az or elevation either.

S/C ..watch that elevation and watch that -

1 1/2 degrees pitch in and 1 1/2 degrees yaw

S/C right.

RKV Roger.

S/C My residual readout in address 36, 35 are the same as they were Monday when everything quit.

RKV Okay.

HOU RKV, Houston Flight.

S/C ...- test here. Next we will go over CSQ and start the fuel cell purge, cross ...

HOU RKV, Houston Flight.

RKV Go ahead Flight.

HOU He has stand<sup>off</sup> maneuver update?

RKV That is affirm. I will give it to him when he starts the burn.

HOU Roger. Also remind him not to open the D-15 door until after this burn.

(Garbled.- Simultaneously with HOU)

HOU That is affirm. We would like to start..

S/C Right. Hydrogen mark.

RKV Okay, and then I have updates for you. One of them is a stand-off maneuver update when you are ready to copy.

S/C Stand by until I get through with this purge.

HOU I heard you. Delta P on section 2 at point eight.

S/C Section 1. Hydrogen mark

HOU Roger.

Delta P light at the end of the purge at approximately 485.

Roger....

Oxygen on section 2 mark.

Are you ready to copy ... onboard tapes?

RKV

That is affirmative.

S/C

Go ahead.

RKV

Okay, maneuver purpose is stand-off maneuver  
ATB 54 37 27 Delta V 8.9 burn time 0 plus  
11, yaw 18 degrees, pitch 56 up. Address 25  
90050, 26 90074, 27 all zeroes. Thrusters  
aft maneuver posigrade up. And this is a  
maneuver for the D-3 mode A burn.

S/C

Roger, understand. Give me address 26 again  
please?

RKV

Roger, 26 is 90074.

HOU

That is retrograde up.

RKV

Your stand-off burn 5437278.9 0 plus 11  
18 degrees yaw, 56 pitch up 25 90050, 26  
90074, zips for 27 aft posigrade up. Sorry  
about that yaw is 180 and maneuver ~~retrograde~~  
up.

S/C

Roger. ... 0 and retrograde up.

RKV

Roger. And I have a couple of items for flight

RKV plan update here too.

S/C Stand by. I am just about through with oxygen.

RKV Okay.

S/C What do we put yaw in for?

HOU RKV, Flight.

RKV Go Flight.

HOU Tell him we are using this with the aft thrusters.  
We want him to use this maneuver for the D-3 Mode  
A calibration burn.

RKV Yes, okay. Using the aft thrusters for the  
D-3 mode A calibration burn.

HOU RKV, Houston Flight.  
Does he understand that? Yaw 180. This is the  
D-3 mode A calibration burn plus the stand-off  
maneuver.

RKV 11, RKV, we are going to have LOS soon, I would  
like to get the rest of this information to  
you.

S/C Go ahead.

RKV Roger, did you understand that this was a D-3  
mode A calibration burn in addition to the stand-  
off?  
11, do you copy?

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S/C Roger, copy.

RKV Roger, did you understand that the .. maneuver  
is also a D-3 mode A.

S/C That is affirmative. That is affirmative.

RKV Okay, update for D-15 start time 54 32 12  
leave door closed until immediately after stand-  
off maneuver. Power down computer after maneuver.  
The second item is delete the power down at 54 05 00.  
And move it to 57 30 00. Do you copy?

RKV Flight, we have had LOS.

I am sure he got most of that update.

HOU Roger.

END OF TAPE

Gemini Control at 53 hours 56 minutes. Gemini 11 is  
coming up on Tananarive now. Let's listen.

HOU Gemini 11 Houston.

S/C Go Houston.

HOU Roger. Could you send command 50 which is  
C and S band beacon off to the Agena?  
Then command 10 for beacons on.

S/C Send command 050?

HOU That is affirm. 050 and 010.

S/C Okay now we're pointing at SEF.

TAN Houston they've been sent. Are they in?

HOU Roger, we can't tell. You are presently yaw  
180 is that correct.

S/C Negative. We're 000 right now.

HOU Roger but on the standoff maneuver yaw would  
be 180 is that correct.

S/C That is affirmative. We're BEF with aft  
flying thrusters.

HOU Roger

S/C I thought you said yaw 1.8, that had me  
buffaloed.

HOU Roger. Were you able to copy the D-15 update?

S/C No would you give it to us please.

HOU Roger. Start time 54:32:12, leave the door closed until immediately after the standoff maneuver. Power down computer after standoff maneuver. Another note, delete the power down at 54:05:00 and power down instead at 57:30:00. This will keep you powered up through the D-15.

S/C Roger, understand. D-15 start time, 54:32:12. Leave the door closed until after the standoff maneuver. Delete the power down in the flight plan and power down after D-15.

HOU That is affirmative.

S/C Roger.

HOU Eleven, Houston. About one minute to LOS.

S/C Roger Houston.

This is Gemini Control, 54 hours 5 minutes into the flight. Gemini 11 has just passed out of range of Tananarive. We have a report on the object sighted by Pete Conrad over Tananarive yesterday on the 18th revolution. It has been identified by NORAD as the Proton III satellite. Since Proton III was more than 450 kilometers from Gemini 11, it is unlikely that any photographs would show more than a point of light. Gemini 11 will be acquired by the CSQ at 54 hours 19 minutes 35 seconds. This is Gemini Control.

END OF TAPE

Gemini Control at 54 hours, 19 minutes into the flight.  
Gemini 11 coming up within range of the Coastal Sentry in the  
western Pacific. Let's listen now.

S/C .....the Agena and we have it right out in front  
of us.

CSQ Oh, roger, will you send command 260?

S/C Roger, 260 on my mark. Mark.

CSQ Okay, we got the event down here.

S/C That's.....whole map, right?

CSQ Okay, boresight for about one minute, right?

S/C Roger. Then send 250, then 251, am I right?

CSQ That's affirmative.

S/C Now it seems to work every time but you'd sure  
never know it from over here.

CSQ Oh, roger. Okay, I'd like to have you send  
command 060, that's the timer reset.

S/C Command 060. Did you get it?

CSQ Oh, roger.

CSQ 11, CSQ.

S/C Go.

CSQ Okay, you can vent your H<sub>2</sub> tank vacuum.

S/C Oh, roger. Let's get rid of these commands  
for the Agena first, shall we?

CSQ Oh, roger. Standing by for 250.

S/C 250 being sent.

CSQ Roger, we got a map and event.

CSQ Roger. Going to 251.

S/C 251 being sent.

CSQ Got a map and event.

S/C Roger, we'll go to event.

S/C CSQ stand by for H<sub>2</sub> tank to vent.

CSQ Oh, roger.

S/C Roger, we ..... the switch.

CSQ Copy.

S/C Bus arm safe.

HOU CSQ from Flight.

CSQ Come in, Flight.

HOU We'd like for you to ask them if they've had  
any change in range, az..... (interrupted)

S/C Roger, we're going to jack it up to 670 now.

CSQ Say again, 11.

S/C We're going to jack the hydrogen up to 670.

CSQ No, you can delete that at this time. We'll  
catch it a little bit later.

S/C Roger.

CSQ Go ahead, Flight. I had missed that last one.

HOU Yeh, ask them if they've had any change in  
range or range rate, az or el.

CSQ I can't read you at all.

HOU Ask the crew if they've had any change in their  
range or range rate, az or el. Do they have

any joy on the radar.

CSQ I copy.

CSQ 11, CSQ.

S/C Go ahead.

CSQ Do you have any change on your range, range  
rate, az or el?

S/C No, that's negative. Let me check one more  
time. We'd like to power down the radar and  
turn the .... to zero. No, address 36 still  
reads 120 feet and 35 reads all nines.

CSQ Roger, copy.

S/C Shall we turn our radar off?

CSQ Stand by.

HOU That's affirmative, CSQ.

CSQ Go ahead.

HOU That's affirmative, CSQ.

CSQ Roger.

CSQ Roger, you can go ahead and power down the  
radar.

S/C Roger.

S/C This is 11. We're going to yaw 180.

CSQ Oh, roger.

CSQ Flight, CSQ. He's yawing around now and both  
the vehicles are looking good at this time.

HOU Roger.

CSQ 11, we've got about a minute to LOS.  
S/C 11, roger. Thank you very much.  
CSQ oh, roger.  
CSQ Flight, CSQ. We've had LOS all parameters.  
Both vehicles are go.  
HOU Roger, CSQ.

This is Gemini Control, 54 hours, 28 minutes. Hawaii will acquire Gemini 11 at 54 hours, 37 minutes, 44 seconds. Just a few seconds prior to acquisition at Hawaii, the crew is scheduled to perform the stand off maneuver. That's at 54 hours, 37 minutes, 27 seconds. It will be a maneuver 8.9 feet per second to null the rates between the - the velocity between the Agena and Gemini. It will also serve as a calibration burn on the D-3 Mass Determination Experiment. Also, at 54 hours, 32 minutes, 12 seconds, the crew will activate the D-15 experiment. Turn it on to warm it up. This is the Night Image Intensification Experiment, to investigate the use of a special image-orthicon TV system for observing dimly lighted areas. It'll take a look at rivers, coastlines, islands, things like that. We show now an orbit for the Gemini and the Agena of 164 by 156 nautical miles. 164 by 156. This is Gemini Control at 54 hours, 29 minutes into the flight.

END OF TAPE

Gemini Control at 54 hours 37 minutes. We should be  
acquiring at Hawaii momentarily. We'll standby there.

HOU Hawaii from Flight.

HAW Go ahead Flight

HOU We'd also like for you to check the beacon  
configuration on the AGena. Can you confirm  
that the S is on only.

HAW That is affirmative. The S-band is the only  
one on.

HOU Roger.

HAW Gemini 11 Hawaii.

S/C Wait one.

HAW Roger.

S/C Go ahead Hawaii

HAW Roger. Just letting you know we're standing by.

S/C Roger. We just finished firing the burn and  
I'm going to activate the door on the TV chute.

HAW Okay.

HAW Gemini 11 Hawaii. We're going to send two  
commands to the Agena, horizon sensors on and  
G08 on.

S/C Roger. It's all yours. Do you want me to  
turn the encoder off.

HAW It looks like its off from the ground.

S/C Rog the radar is off.

HAW Roger.

HOU Hawaii from Flight. Send us a OBC please.

HAW Roger.

HAW Both commands sent and verified.

HOU Roger.

HOU Hawaii from Flight. Send us a Gemini main  
ASAP.

HAW Roger.

HOU Hawaii from Flight

HAW Go ahead

HOU Ask him to check stack 2 Charlie.

HAW Roger.

Eleven, Hawaii

S/C Go ahead

HAW Roger. Give us a reading on stack 2 Charlie  
please.

S/C Roger. 2 Charlie is down on the bottom.

Roger. It's 0 F, 0 volts.

HAW Roger. Do you want to turn off that stack:  
Flight?

S/C (garbled) up

HAW Say again.

Eleven, Hawaii. Might as well turn it off.

S/C Roger going off.

HOU Hawaii from Flight.

HAW Go ahead.

HOU Was the switch on or off?

HAW It was on, he just turned it off.

HOU Roger.

S/C Hawaii, 11.

HAW Go ahead

S/C We planned to stay in horoscan mode until we  
do D-15.

HAW Okay. Roger. Scan mode.

HOU Can he do it with .....

HAW Say again.

What was that Flight?

HOU That was a wrong loop transmission.

HAW Okay.

HOU Hawaii from Flight.

HAW Go ahead

HOU Would you send us an Agena main.

HAW Roger.

S/C Hawaii, 11

HAW Go ahead.

S/C They must have shorted out because we never  
saw it go.

HAW Okay.

S/C We're going to go ahead and power down  
the computer.

HAW Okay.  
We confirm that you are powered down.

S/C Wait one. I'm going to prelaunch here.

HAW Flight, Hawaii

HOU Go ahead Hawaii

HAW Roger, it doesn't look like these sections are  
sharing the load too good.

HOU Roger.

HAW We show main cryo number one is sturdy,  
number two is 17.

S/C Hello Hawaii. How does the D-15 equipment  
look?

HAW It looks okay, here. We show your recorder  
monitor is operating normally.

S/C Say again.

HAW We show recorder monitor operating normally.

S/C Roger.

HOU Hawaii from Flight

HAW Go ahead

HOU LOS main, Gemini.

HAW Roger.

HAW We've had LOS both vehicles.

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HOU Roger.

HOU Hawaii from Flight

HAW Go ahead

HOU How about playing back your dump tape. See  
if you see anything on it.....

END OF TAPE

This is Gemini Control, 54 hours 55 minutes into the flight. We apparently have lost one stack of the fuel cell. Fuel cell consists of six such stacks so this is one sixth of the electrical generating capacity. However, the other five stacks are sharing the load quite successfully and the Flight Director, Clifford Charlesworth says he is not concerned about being able to complete this mission. This is Gemini Control at 54 hours 55 minutes.

END OF TAPE

This is Gemini Control 55 hours 11 minutes into the flight.

And the Rose Knot tracking ship is on the verge of acquiring Gemini 11. Let's stand by for this pass.

RKV Gemini 11, RKV.

S/C Go ahead RKV.

RKV All right, we would like to ... spacecraft.  
We would like to have the number 1 suit fan on and would also like the secondary loop with the A-pump off, D-pump on.

S/C Okay, we have it on number 1 suit only.

RKV Okay, ... B-pump.

S/C B-pump ... computer...

RKV Roger.

S/C We don't need our heater on because...

RKV All right.

S/C (Garbled)

RKV Flight, were you able to copy?

HOU Negative.

RKV Okay, they did have number 1 on all way.

We have switched to secondary B on.

HOU RKV, Flight.

RKV Flight RKV.

HOU Send us another Gemini main.

RKV Gemini main. Roger.

Gemini Control Houston. We are continuing to monitor the pass

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over the Rose Knot. There is no conversation. Very little conversation understandable.

...approximately 10 seconds and then back off.

RKV Flight, can you read me?

HOU Occasionally. Go ahead.

RKV Roger. Twice so far during this pass we have noted operation, the framing camera XHO4.

HOU RKV, Flight.

RKV Go Flight.

HOU Have you confirmed what ACME control mode he is using?

RKV Pulse.

HOU Copy.

RKV 11, RKV. We will LOS in about 30 seconds.

S/C Roger. We are programming the D-15.

RKV Roger. We have noticed operation of the ...

HOU RKV, Flight, Agena main.

RKV Agena main, roger.

Flight, RKV. LOS both vehicles.

HOU Roger.

Gemini Control. We have just had LOS over Rose Knot Victor.

Next station to acquire will be Pretoria at 55:28. However, there will be no conversation over this station. This is Gemini Control.

END OF TAPE

GEMINI 11 MISSION COMMENTARY, 9/14/66 5:35 PM TAPE 214 PAGE 1  
Gemini Control Houston at 56 hours 52 minutes into the flight  
of Gemini 11. The Gemini 11 spacecraft now some 15 miles away  
from the Agena target vehicle, has just passed beyond South  
America and is under acquisition by RKV. At this time we will  
play playback tapes from the Coastal Sentry pass and Hawaii  
and then pick up the Rose Knot pass. We will play those tapes  
for you now.

CSQ                    AFD, CSQ Cap Com.

HOU                    Would you get the crew to tell you what they  
threw away after the standup EVA today so we  
can update our weight?

CSQ                    Roger. AFD, CSQ.

HOU                    Go ahead, CSQ.

CSQ                    Okay, there is nodal update you do not want  
passed until next rev. Is that correct?

HOU                    That is correct. You will probably have your  
hands full getting that block update up.

CSQ                    Roger. Got TM solid both vehicles.

HOU                    Roger. If you have sufficient time, you can  
give him the nodal update. Don't worry about  
it.

CSQ                    Roger. Gemini 11, CSQ.

S/C                    All right CSQ, 11 here.

CSQ Roger. We would like to get a listing from  
you as to what you threw away after the standup  
EVA today.

S/C Roger, we didn't throw anything away except food  
garbage.

CSQ Roger, copy.

S/C We didn't have enough time to get the rack out  
of the left-hand footwell. It is still in here.

CSQ Okay, I have got a PLA update for you when you  
are ready to copy.

S/C Wait one.

CSQ Send Agena load get a compare, send SPC enable.

S/C Roger, copy.

CSQ Roger. Area 38 Delta 59 43 28, 20 plus 32,  
25 plus 31, area 39-2 61 20 02, 20 plus 10,  
25 plus 38, area 40-2 62 52 55, 20 plus 05,  
25 plus 32, area 41-2 64 28 41, 20 plus 01,  
25 plus 91, area 42-1 65 56 16, 19 plus 44  
25 plus 29, area 43-1 67 31 16, 20 plus 08  
25 plus 54, area 44-1 69 06 39, 20 plus 15  
26 plus 09, bank angle for all areas is roll  
left 85, roll right 95, weather in all areas  
is good and no SEP maneuver. Over.

S/C Roger.

CSQ And I have a nodal update for you.

S/C Ready to copy.

CSQ Roger, node at 57 07 51 rev 36 20.1 degrees east.  
0 hours 44 minutes right Ascension. Over.

S/C Copied that.

CSQ That is about all I have for you this pass.

S/C Okay. We have a question for you.

CSQ Go ahead.

S/C With that two Charley shut down, on the next  
fuel cell purge do we purge in the normal  
manner?

HOU That is affirmative CSQ.

CSQ That is affirmative 11.

S/C Okay. CSQ -

CSQ Go ahead 11.

S/C We would like to get some idea of what you  
think is our total propellant aboard right now.  
In pounds.

CSQ Stand by. Did you copy Houston?

HOU Roger. Stand by one. CSQ, it looks like we  
have about 70 pounds of fuel and about 115 pounds  
of oxidizer.

CSQ Three zero pounds of fuel?

HOU Seven zero.

CSQ And ox?

HOU One one five.

CSQ Roger, copy.

11, CSQ.

S/C Go ahead.

CSQ Okay, it looks like you have got about 70  
pounds of fuel and 115 pounds of oxidizer.

S/C Thank you.

CSQ About a minute until LOS, 11.

S/C Roger.

Tell them that the...

CSQ Roger, copy.

AFD, CSQ.

HOU Go ahead, CSQ.

CSQ Okay, we have had LOS on all primers, both  
vehicles are go and that last transmission  
was the D-15 was progressing normally.

HOU Roger.

HAW Hawaii has TM contact.

HOU Roger, Hawaii.

HAW Seeing S-band track, Hawaii.

HOU Roger Hawaii.

HAW Gemini 11, Hawaii standing by.

S/C Roger, Hawaii.

HAW Flight, Hawaii.

HOU Go ahead Hawaii.

HAW Roger, minus 58 degrees.

HOU Minus 58.

HAW All systems are looking okay on both vehicles.

HOU Roger, Hawaii.

HAW One minute until LOS, standing by.

S/C Roger, we had to complete the other half of  
D-15.

HAW Okay. See you tomorrow.

S/C Roger roger.

HAW Flight, Hawaii.

HOU Go ahead, Hawaii.

HAW No change on that temperature.

HOU Okay.

HAW LOS on both vehicles. All systems were  
go at LOS.

HOU Roger, Hawaii.

RKV Gemini 11, RKV, we have nothing for you at  
this time, we are standing by.

S/C How are you RKV? Can you ask Houston how  
far behind the Agena we are. We were  
watching it in the daytime out there and  
we were curious as to how far away were  
seeing it.

RKV Stand by on that. I will get you a number.  
Okay, they will have that information on  
that subject.

S/C Thank you.

RKV Our acq message is still about 3 seconds difference....

Our acq message is about 3 seconds difference.

HOU RKV Cap Com. They are about 16.6 miles behind him right now.

RKV 16.6 miles.

HOU 16.6.

RKV Roger, thank you. 11, RKV. They say you are about 16.6 miles behind.

S/C Roger. Do you know whether we are opening or closing yet?

RKV Does it appear that they are opening or closing?

HOU Stand by one. They are gradually closing, RKV and they should be about 13.9 miles when they wake up in the morning.

RKV Okay, they advise that you are gradually closing and that when you wake up tomorrow morning, you will be about 13.9 miles behind.

S/C Roger. Doing it.

HOU Gemini 11, Houston. We are standing by.

Gemini 11, Houston. Standing by.

S/C ..Houston we are progressing with the last half of the D-15.

HOU Roger.

S/C ... 100 percent today.

HOU Gemini 11, Houston. Could you give us a  
PQI readout?

S/C Roger. I am showing about 11, if I squench  
down there and look at it. If I look at it  
straight down on parallax, it is showing about  
10.

HOU Roger. How is your number 8 thruster been  
performing.

S/C Exceptionally.

END OF TAPE

Gemini Control Houston, we're joining the Ascension pass now.

Gemini Control Houston, we've just had LOS over Ascension. We're standing by now for our pass over Kano. This is Gemini Control Houston.

We're still standing by for our pass over Kano. This is Gemini Control.

HOU Kano go remote.

KNO Kano's remote and we have contact.

HOU 'll, Houston.

S/C Go ahead.

HOU How's your number 8 thruster been performing?

S/C Still off.

HOU Roger.

S/C It's still putting out something but we still have a little roll with it but it's alright. It's not bothering us.

HOU Roger.

S/C We have to wrap up the D-15 at the end of this night pass and I'd say I'd give it a 100 percent for today.

HOU Roger. It looks that way from down here. How's the D-15 been going?

S/C It's performing very, very well.

HOU Good.

S/C How's our fuel remaining look to you?

HOU It hasn't changed since the last report we gave  
you which was 70 pounds of fuel and a 115 pounds  
of oxidizer.

S/C Does that look all right? Have we got enough?

HOU Yes, right now you do.

HOU 11, Houston.

S/C Go ahead.

HOU Right now we show you about 16 miles behind the  
Agena and we expect tomorrow morning when you  
wake up you'll decrease this distance to some-  
thing around 14 miles.

S/C Okay. We fouled up in this last daylight pass.  
We could look at him and we were just getting  
the sextant on him when we had to go back to  
D-15.

HOU Roger.

S/C Could you tell me which way it's oriented? Is  
it perpendicular to the orbital .....

KNO Kano has LOS.

Gemini Control Houston. Kano just had loss of signal.  
Our next station will be Coastal Sentry at 57 hours, 31 minutes  
into the flight. However, it is doubtful at this time we'll  
have conversation with the crew since they will enter their  
sleep period at that time. This is Gemini Control.

END OF TAPE

Gemini Control Houston, we're standing by now for our  
pass over the Coastal Sentry. We will receive a crew  
status report over the Coastal Sentry. 57 hours 31 minutes  
and we're standing by.

CSQ            TM solid mode both vehicles and both vehicles  
                 are go.

HOU            Roger CSQ.

CSQ            Go ahead.

CSQ            Gemini 11, CSQ Cap Com.

S/C            CSQ 11, go.

CSQ            Roger. Have you completed your purge yet?

S/C            That is affirmative. Just finished it, bump-  
ing up the hydrogen pressure to 670.

CSQ            Roger. Would you move your TM switch to  
the command position please?

S/C            CSQ, 11. You are cutting out, say again.

CSQ            Would you move your TM switch to the command  
position?

S/C            TM is in command.

CSQ            Okay, I am going to send you a TX.

S/C            Roger.

CSQ            Okay I'm ready for your crew status report.

S/C            Roger. The command pilot had Day 4, Meal B,  
the pilot had Day 4, Meal.....solids were  
left in both those meals. The pilot had  
Day 3, Meal A and shared some of that with the

command pilot. The pilot ate most of the solids in the command pilots meals. The watergun .....reads 1427.

CSQ Roger. You cut out there right after 4B, could you repeat after that please?

S/C Roger. Did you say the command pilot ate Day 4, Meal B.

CSQ That is affirmative.

S/C Roger then the pilot ate Day 4 Meal B also. Also Day 3 Meal A and the command pilot shared part of that meal. The pilot also ate the solid foods in the command pilots meal.

CSQ Roger. Copy all of that. Would like to get a radiation reading from you?

S/C (garbled) we've got that stowed in the bottom, at the completion of the high orbit today it read 11.

The highest RADS per hour was 3/10th's during that particular portion.

CSQ Roger understand.

I want to advise you that the Agena is in the orbital plane and with the TDA aft.

S/C Roger, thank you. We've seen it.

HOU CSQ,AFD would you give us a Gemini main.

CSQ Gemini main, roger coming up.

HOU Wait a minute, have you sent one already.

CSQ That's affirmative

HOU Don't send one.

CSQ Do not send one.

HOU Right. We haven't got it yet, let's wait  
and see if we get the main that you sent.

CSQ AFD, CSQ.

HOU I say don't send one if you have already  
sent one. We'll wait and see if we get the  
first one you sent first.

CSQ Roger.  
AFD, CSQ

HOU Go ahead.

CSQ Would you believe the GET clock is in sync?

HOU Yes we'd believe it. We sent a reset to it.

CSQ Roger. It reset and it's in sync with GMT.

HOU Very good.  
That ought to make things a little easier for  
the Agena people on their loads.

CSQ That is affirmative.  
We can't see much increase in that H<sub>2</sub> tank  
pressure.

HOU What is it sitting at now?

CSQ On the meter it's 240.

HOU Okay.

CSQ And at 12:18 reading 242.

HOU 242. Would you give us another Gemini main?

CSQ Roger. Coming at you.

S/C CSQ, 11.

CSQ Go ahead 11.

S/C Roger. Will you check with the Flight Surgeon, the command pilot desires one more fox trot before retrofire.

CSQ Roger, standby.

HOU Houston, copy.

HOU No I didn't copy, say again.

CSQ He wants to take another fox trot.

HOU Roger standby.

CSQ Surgeon says that is okay.

CSQ Now that was before retrofire.

HOU Standby.

CSQ Surgeon says that is okay.

S/C Thank you, thank you.

HOU The pilot thanks you and the command pilot thanks you.

HOU CSQ, is he going to take that now are prior to retrofire?

CSQ 11, CSQ. You are not going to take that now are you.

S/C Negative.

HOU We copied.

HOU CSQ, does he have 2B pumps on. That is  
what we want.

CSQ Negative. He's got A and the primary loop.  
I'll have him turn the B on.

HOU Roger.

CSQ Eleven, CSQ.

S/C Go ahead.

CSQ Okay, do you want to turn your B pump on and  
.....

S/C Roger. That's on. We're just in the process  
of powering down now and shifting stowage.

CSQ Roger. We have about a minute to LOS here.  
This will be our last pass seeing you awake.  
We'll see you back in Houston.

S/C Yes. Give me a chance - could you find out  
what time you are going to wake us in the  
morning. If we don't see you then, thank you  
very very much. We really enjoyed it.

CSQ Roger.  
Houston have you got any idea what time you  
are going to wake them up in the morning?

HOU Standby one.  
About 64:40 CSQ.

CSQ Gemini 11, CSQ.  
They say about 64:40.

S/C Roger. See you then.

CSQ Roger, see you back in Houston.

HOU That will be at about Antigua.

CSQ We've had LOS.

Gemini Control Houston, we've just had loss of signal with the Coastal Sentry. Gemini 11 crew advises that they will entering their rest period shortly and we expect no more conversation with the crew this evening. Most of the conversation was with Pilot Dick Gordon. At 57 hours 40 minutes this is Gemini Control.

END OF TAPE

Gemini Control Houston at 58 hours, 7 minutes, 37 seconds into the flight of Gemini 11. The Gemini 11 spacecraft is now on its 36th revolution. It's making its southerly pass over the Pacific. It's out of the range of Canton now and headed toward the Rose Knot Victor off the east coast of South America. Since the crew is sleeping there will be no attempt on the part of Rose Knot to contact the crew; since the crew's entered their rest period, we should say. The spacecraft apogee and perigee profile is presently clocking 164.3 nautical by 154 nautical. Based on preliminary data with no re-rendezvous and you should be advised that no decision has been made at the present time as to whether or not we will re-rendezvous yet. Our retro sequence appears this way for present. This is with no re-rendezvous. Ground elapsed time to time of retro is 70 hours, 41 minutes, 41 seconds; plus time to 400 K is plus 20 minutes, 19 seconds; plus time to begin blackout, 22 minutes, 46 seconds; plus time to end the blackout, 28 minutes; plus time to drogue deploy, 29 minutes, 44 seconds; plus time to main chute deploy, 31 minutes, 18 seconds; plus time to splash in 45-1, 35 minutes, 18 seconds; predicted landing location would be 24 degrees north, - 24 degrees, 16 minutes north - and 70 degrees west. That would be latitude and longitude, in that order. Since the crew is - has now entered their rest period, we'll backtrack for a moment. The mauve shift reported aboard two hours ago.

And earlier this evening, the mauve shift had a touch of red, white and blue in it. At that time Mr. Chris Kraft, John Hodge, and Gene Kranz were all assembled in the Control Center. In the absence of a Flight Director, John Hodge did go around the room with the Flight Controllers for the evaluation of the status of the mission. All systems did look green. E Com advised that the remaining five stacks, these would be the five stacks in the fuel cells, have picked up the load after stack 2C went out earlier in the mission. During the course of the evening we will go through further evaluation as to re-rendezvous prospects for in the morning. At 58 hours, 11 minutes, 15 seconds, this is Gemini Control.

END OF TAPE

Gemini Control - Houston at 59 hours, 7 minutes, 38 seconds into the mission. The Gemini 11 spacecraft is now passing over Coastal Sentry. We will have no contact with the crew on this pass since their rest period is now underway. We've had no indication at the present time that the crew is sleeping yet. There's no doubt, however, that they're relaxing with the bulk of the Gemini 11 mission behind them. Weather advises that favorable weather conditions are expected in the Western Atlantic for the prime landing area for Gemini 11. That would be 45-1. Weather indicates that skies will be partly cloudy. Visibility 10 miles with widely scattered showers in vicinity near daybreak. Winds will be southeast at the magnitude of 10 to 15 knots, and sea state two to four feet. Temperature in the area should range about 82°. Concerning weather which the spacecraft might be flying over -- we have in the Western Pacific two tropical storms. These are Flossie and Grace, and one typhoon. This is Elsie. Typhoon Elsie is located in the South China Sea, south of Hong Kong. Earlier today, Gemini 11 passed over tropical storms Helga and Franchesca in the Eastern North Pacific Ocean. Elsewhere beneath the track of Gemini 11, they have flown over and will continue to fly over a variety of weather systems ranging from extensive cloud areas, over some equatorial ocean area and over Central Africa to nearly clear skies over Northern and

GEMINI 11 MISSION COMMENTARY, 9/14/66, 7:50 PM, TAPE 218, PAGE 2

Southern Africa, Arabia and much of Australia. We're standing by now in Mission Control Center still awaiting word on any revisions that might occur to the Flight Plan with regard to a rendezvous with the Agena Target Vehicle. At 59 hours, 10 minutes, this is Gemini Control.

END OF TAPE

Gemini Control - Houston at 60 hours, 7 minutes into the mission. The Gemini 11 spacecraft has just begun its 38th revolution a short while ago. It's now over the Ascension station or under acquisition by Ascension, who is monitoring the systems aboard the spacecraft. We in contacting the Flight Surgeon, it is still considered that the Gemini 11 crew is in a relaxing mode rather than a sleeping mode at this time. Pulse reading on Command Pilot Pete Conrad is 60 beats per minute. For Dick Gordon, pilot, pulse rate is 69. Respiration rate for Conrad reads 12, and for Gordon 18. A short while ago we had contact with the prime recovery vessel, the USS Guam, in the Atlantic; and because of the hour of the evening, most personnel aboard the Guam, like Gemini 11, have powered down for the night. They report, however, that they are on station and ready for tomorrow's splash. In the Mission Control Center, the time to retro clock continues its downward count. We now read 10 hours, 33 minutes, 11 seconds; and in the Mission Operations Control Room, quiet planning continues as we look forward to the morning's activities here. At 60 hours, 9 minutes into the mission of Gemini 11, this is Gemini Control.

END OF TAPE

Gemini Control - Houston at 61 hours, 7 minutes into the mission. Gemini 11 is now in its 38th revolution. It's making a southerly sweep over the Pacific far to the south of both Canton and Hawaii tracking stations. Next acquisition will be at 61 hours, 45 minutes or some 37 minutes from now; and this will be over Canary. There will be no contact with the crew, of course, as they are still in their rest period and will be for some four hours. The preliminary indications -- preliminary readings tell us that the command pilot, Pete Conrad, is probably now sleeping, with Pilot Dick Gordon nearing a sleep state. We are -- in Mission Control, we're still standing by regarding any decision concerning maneuvering the Gemini toward its Agena Target Vehicle. This maneuver, by the way, if it occurs, would be more aptly described as an Agena fly-by than an attempt to rendezvous. At 61 hours, 9 minutes into the flight of Gemini 11, this is Gemini Control

END OF TAPE

GEMINI 11 MISSION COMMENTARY, 9/14/66, 10:50 PM, TAPE 221, PAGE 1

Gemini Control - Houston at 62 hours, 7 minutes into the flight. The Gemini spacecraft is now coming up over India. It's clocking in as apogee and perigee at 164.2 nautical by 154.2 nautical. Gemini 11 will make a long loop around before it's next acquired by a tracking station. Next acquisition will be over Antigua. And this is slightly more than one hour from this time. Acquisition will be at 63 hours, 9 minutes and 32 seconds. We have a firm indication now that both crew members -- both Pete Conrad and Dick Gordon -- are sleeping. And at 62 hours, 8 minutes into the flight of Gemini 11, this is Gemini Control.

END OF TAPE

GEMINI 11 MISSION COMMENTARY. 9/14/66, 11:50 PM. TAPE 222, PAGE 1

This is Gemini Control - Houston, 63 hours, 07 minutes into the flight. The crew is asleep. They have been asleep for the past two and a half hours. The sleep period began at an elapsed time of 57 hours, 30 minutes. The surgeon has advised that he doesn't think sleep -- deep sleep really set in until about 60 hours, 40 minutes. The crew will be awakened at -- in about two hours. So they will only have had about four hours sleep for the night. The surgeon says they've had about slightly more than four pounds of water apiece in the past 24 hours, and all in all he's completely satisfied with their physical condition. Earlier in the evening, Pete Conrad checked in to advise that he was taking another fox trot pill or a low motal pill. This is a pill to prevent defecation. The fly by -- the much discussed fly by maneuver is planned after the crew wakes up -- approximately one hour after they wake up. In addition, we will carry out an S-30 experiment using the low-light level TV system onboard -- a system involved for -- installed to carry out the D-15 low light level experiment that -- experiment involving the searching out -- the looking at objects on the water and on land to see how quickly the crew or the system can adapt to a dark condition. As was reported earlier, I believe, Charlie in the fuel cell system is out. It's been out now for several hours. Rapid degradation was noted on the system, and the suspicion is

GEMINI 11 MISSION COMMENTARY, 9/14/66, 11:50 PM, TAPE 222, PAGE 2

that the membrane ruptured or something of that order which brought about quick deterioration. In any case, stack two Charlie is out. The other stacks are working very nicely and sharing the load. We've also fairly well pinned down our radar troubles to the Agena transponder. All parties here tentatively agree that the transponder on the radar -- the Agena radar system is inoperative. That's not the radar itself. It's simply the transponder that reflects the signal back to the spacecraft. At 63 hours, 10 minutes into the flight, that's our status.

END OF TAPE

GEMINI 11 MISSION COMMENTARY 9/15/66 12:50 AM TAPE 223 PAGE 1

Gemini Control, Houston, 64 hours 7 minutes into the flight.

The Gemini is over Australia. It appeared that one of the crewmen, I think Dick Gordon woke up about midway through this pass. However, we are maintaining radio silence, we didn't get a call from them. The plan is to wake them up about 30 minutes from now over the Antigua area. This is Gemini Control, Houston.

END OF TAPE

This is Gemini Control Houston 64 hours 52 minutes into the flight. About ten minutes ago as Gemini 11 came up on the Grand Turk Station, the crew put in the first call to us rather than Houston calling them as has been the practice. Sounding very chipper this morning. A good deal of discussion about this fly-by maneuver as it is being called, that will take place a little later in this revolution. They have also been updated on their various experiments, cutoff fuel cutoff points and the like. We have the tape conversation ready and we'll play it for you now.

S/C Hello Houston, Gemini 11 over.

HOU Roger, this is Houston. Good morning.

S/C Morning. You have permission to power up now.

HOU Roger, you're cleared to power up and align the platform.

S/C We said you could power up.

HOU Oh, okay thank you. Hey, I have a whole lot of stuff for you to copy this morning. But before I get in to it, want to make clear that the primary purpose of this intercept maneuver that you going to be receiving is to evaluate the ground vectoring capability. Over.

S/C Thank you, Roger.

HOU And also we want you to do S-30 during this night pass prior to the intercept maneuver. Over.

HOU Gemini 11 Houston. Over.

S/C Go ahead

LOS Antigua

HOU Roger. Are you ready to copy. Over.

S/C Go ahead John.

HOU Roger. The first thing is the power up and align the platform. Want you to use the computer only for the intercept initiation maneuver. That's at 6440.

S/C It's at 6444 now.

HOU That's at 65 hours over the Canaries. Over.

S/C Okay.

HOU And the fuel cell purge is at the Canaries at 65 hours. Over.

S/C Roger John, we've already done that.

HOU Roger. Fine. At 6516 activate the D-15 equipment for S-30. That's sequence 01. over.

S/C Roger. 6515 sequence 01 on the D15 activated.

HOU Roger. The S-30 is from 654633 that's sunrise to 662305 sequences 02 through 10. Delete sequence 08. Over.

S/C Roger. Delete 08. Copy rest.

HOU Roger, your intercept initiation maneuver will be given to you over the Canaries. And also the time to start your vent timer and eight day clock for a spacecraft TPI time, will be given to you over there.

S/C

Okay.

HOU

There is a procedure that you can use to get your what would be your fourth mid-course correction with your radar not operating. You can take the GT 10 M=4 backup charts for radar failure. You enter the backup charts with your vent time

END OF TAPE

HOU You enter the backup charts with your vent time that you started your clock at TPI, and you can calculate your up-down corrections. The Delta V of the fourth mid-course, correction when it's calculated and divided by three will target you to hit. Over.

S/C Roger, John. Was that for the passive rendezvous or the co-elliptic one?

HOU That's with an Omega T of 130 degrees scale down. over.

S/C Okay, Roger, I understand

HOU For your retrofire platform alignment, your propellant cutoff is 2.5 per cent. over.

S/C Roger. 2.5 per cent

HOU Have you got your radar on now, over.

S/C Negative

HOU Roger, if you turn it on and check it, the target is about 22 or 23 miles from you, over.

S/C We have it visually

HOU Roger. And over Carnarvon, we'd like to get an elevation and time to target just before sunset there, so that we can see how nominal you intercept maneuver burn was. Over.

S/C Roger

HOU You'll also be given an S-4 an activation time over Carnarvon.

S/C Roger

HOU Gemini 11, Houston. over.

S/C Go ahead

HOU Roger, we're going to call this an Agena fly-by. over.

S/C Alright

HOU Roger. You have the OAMS propellant cutoff for it. over.

S/C Roger. 2.5

HOU Thats affirmed

HOU Gemini 11, Houston. We have a model update for you. over.

S/C Roger, go.

HOU 64 38 42 rev 40, 95.3 degrees west, 0 hours 35 minutes right ascension. over.

S/C Roger, copy

HOU Gemini 11, Houston. Do you have any questions about this intercept method? over.

S/C I'm not sure that I understand your vent time, but you will give us a time to start our vent time. Is that correct?

HOU That's affirmative. It will be just exactly - it's a scale down 130 degree transfer and so if you start your vent timer and enter it with a nominal time, you will do your backup

mid-course calculations occur at the nominal times. over.

S/C Okay, Delta V at transfer is what, nominally zero?

HOU Nominally zero. Yes sir. You understand you'll be right in the middle of S-30 while TPI is going on. over.

S/C That's okay.

HOU You have to understand that the important thing is to get S-30 done and the only mid-course you'll have a chance for, is when you break out into the sunshine there toward the end. It'll be the fourth mid-course of the backup solution. over.

S/C Roger, I understand. The fourth mid-course..

HOU You guys do good work.

S/C Thank you

GTI LOS, Turk

HOU Gemini 11 Houston, over.

S/C Go ahead, Turk

HOU Roger, when you turn your L-band on, could you turn the encoder on, too. over.

S/C Roger

END OF TAPE

HOU Could you turn the encoder on too?

S/C Roger.

Copy, affirm. The encoder is on.

HOU Roger.

Gemini 11, Houston. Turn the encoder off,  
please.

S/C Roger. The encoder is off.

HOU Encoder back on, 11.

S/C Say again.

HOU Encoder on, Over.

S/C The encoder on.

HOU We are at 30 seconds to LOS at Antigua.

S/C Roger, say is the burn copy with the aft  
firing thrusters or what?

HOU We got it the forward firing thrusters,  
that okay?

S/C I guess so.

ANT LOS Antigua.

Gemini Control, Houston here, 65 hours 1 minute into the  
flight. While that tape was playing, the Canary station  
has acquired. Here is how that conversation is going.

CYI We have already completed S-30.

HOU Affirmative, and we updated the S-30 from  
here.

CYI Okay, do you want me to pass them this  
MI on bringing the main battery on No. 3  
up?

HOU Yes.

CYI Okay.

HOU And that's the MI - the conditions for bringing it on.

CYI Do you want me to get Cryo readings at this time?

HOU Okay, let's see if we can fit it in, Canary.

CYI Okay.

HOU At the first part of your pass, we will try to get you this update.

Standby to copy it, I am going to read it to you.

CYI I have the Intercept Maneuver.

HOU Okay that's the first one. We are going to give you another one.

CYI Okay.

HOU Don't read them that one, we won't use that one unless we run out of Com. time here.

CYI We won't use this one that I have.

HOU No, we are going to send you a new one.

CYI Okay.

HOU And have somebody standing by to copy is out there. When I get it, I will read it to you.

CYI We have TM solid on Gemini and Agena.

HOU Roger.

CYI We have C- and F-band track.

HOU Roger.

HOU            Canary from Flight, put somebody on to copy  
                 this message.

CYI            They are on, Flight.

HOU            Ready to copy?

CYI            Roger.

HOU            Purpose the intercept maneuver, GETB  
                 65 + 27 + 21; Burn time 00 + 23, 25:- 900:87,  
                 26 - 00:121 ...

CYI            Gemini 11, Canary.

S/C            Go ahead, Canary.

HOU            I say again on Address 26 - 00:121, Thruster  
                 forward, spacecraft TPI - I don't have yet  
                 coming to you. Midcourse correction delta V  
                 divide by 3. Use M=4 onboard chart.

CYI            Could you do this again.

HOU            Roger.  
                 What do you want?

CYI            Okay, bring on your main battery No. 3....

HOU            Say again...

CYI            Main Bus volt are less than 22.5.

CYI            Okay, start with GETB again, please.

HOU            With what.

CYI            With GETB.

HOU            GETB 65 + 27 + 21.....

END OF TAPE

HOU (cont'd) TB 65 plus 27 plus 21, Burn time 00 plus 23.  
address 25 90087 address 26 00121 Thrusters  
forward spacecraft TPI time

CYI Say again

HOU Spacecraft TPI time, 66 plus 06 plus 49  
mid-course correction divide by 3, Okay?

CYI Okay, you want me to read it back.

HOU Go ahead, say it back to me.

CYI Say again.

HOU Why don't you go ahead and read it to the  
crew and we'll monitor it.

CYI Roger (clicked) 425 9008 spacecraft TPI at  
66 06 49 mid-course correction is divide  
by 3.

S/C Roger.

CYI Okay, do you want to.... (interrupted)

S/C Okay, now we'll start our vent timers at  
66 06 49 counting up at zero.

CYI That's 66 06 49.

S/C Roger. That's when we start our vent timer  
counting up.

CYI That's right.

HOU Canary from flight.

CYI Go ahead flight.

HOU What GETB did you read them?

CYI 65 27 21

HOU Roger

CYI And I gave them the burn time as 0023. I  
don't think you were copying, I punched  
you off Goddard here.

HOU I'm with you now.

CYI Did you want to give them this Omega T flight?

HOU Say again

CYI Did you want to give them this Omega T?  
130 degrees.

HOU No, that was just a note, I think he knows  
that.

CYI Okay. I think we got it all. We got his  
cryo reading. TS is in.

HOU Okay.

CYI Okay, 11, this is Canary, you can turn your  
cryo switch off.

S/C Roger. Off.

CYI Canary to flight.

HOU Go ahead flight

CYI Like to ask him if he has any questions.

HOU Okay. 11 Canary Do you have any questions  
on the maneuvers.

S/C Negative. Could you give us the time of the  
next sunset?

CYI Stand by one.

S/C Stand by.

HOU Next sunset is at 65 plus 46 plus 33. Sunrise  
will be 66 plus 23 plus 05.

CYI Okay 11, Canary's here.

HOU Go ahead.

CYI Okay, your next sunset is at 65 46 33 sunrise  
66 23 05. Do you copy?

HOU Roger.

HOU Flight plans flight

CYI Canaries 11

HOU Go ahead 11

CYI Roger. Now on the nominal range rate at  
the fourth correction do you want us to  
divide that by 3 too? Besides our answer?

HOU Make it...

CYI I'm just trying to see what we're going to  
be closing them at.

HOU Negative, Canary. Just tell them this, just  
go into the charts with the nominal numbers as  
they would be.....

END OF TAPE

HOU            Canary, tell them this. Just go into the  
                 charts with the nominal numbers as they  
                 would be for a regular rendezvous and then  
                 just divide the answer by three. Divide  
                 the Delta V answer by three.

CYI            11, just go into your charts with the nominal  
                 and divide your answer by three.

S/C            Roger, I understand that, but what I want to  
                 know is, if I'm really under nominal, will  
                 my closing rate be one-third of what it is  
                 on these charts?

CYI            Standby one

HOU            Standby, I don't think we know the answer to  
                 that. Canaries, we don't know the answer to  
                 that

CYI            Okay, I'll tell him that.

CYI            11, this is Canary. We don't know for sure the  
                 answer on that one.

S/C            It should be close to one-third of what it  
                 would be nominally on the regular one.

HOU            Right. A Gemini LOS main, please, Canary.

CYI            LOS at Gemini. We have Agena TM LOS, S-  
                 band LOS.

HOU            Kano go remote

KNO            Kano is remote and we have crew stat.

HOU            Gemini 11 Houston at Kano, over.

S/C            Okay, Houston

HOU            You understand, you don't divide the angle by three, it's just the Delta V that you calculate, over.

S/C            What I was kinda interested in John, is if we were completely nominal. What would our closing rate be there?

HOU            Rog. I think it would be pretty close to being ... of a normal one divided by three.

S/C            Okay, In other words, it's nothing that we can't hack at the window without a radar, I don't want to run into them.

HOU            No, that would be pretty slow, like 15 fps or so.

S/C            Okay.

HOU            At initiation, Gemini 11, you're going to be almost 25 miles behind. 24.9. over.

S/C            Okay, I thought we were going to close during the night. What happened?

HOU            Haven't determined that yet. over.

S/C            Say again?

HOU            Roger, we don't know the reason for that. over.

S/C            Okay, How about the outer plane. Were we exactly in plane with them?

HOU            1 or 2 feet per second, Pete. It's in the

nodes.

S/C            Okay, thank you. John, I'll tell you the  
reason for being behind, we're probably  
in a higher orbit than he is. How's  
that for barnyard.

HOU            That's possible alright. Not very so, you're  
almost level with it.

S/C            We saw him this morning. If you guys will send  
a tanker up, we'll stay up a longer.

HOU            Roger, the tank is at ~~Guam~~. It's on the  
water. over.

S/C            Sorry about that.

CRO            Carnarvon from flight.

KNO            Kano has LOS

HOU            Flight, Carnarvon

END OF TAPE

This is Gemini Control, Houston, 65 hours 22 minutes into the flight. Five minutes from now, the crew will perform the retrograde burn which will start them into the Fly-by Maneuver, as it's being called. They trail the Agena by 24 to 25 miles according to our best and most recent tracking data. The maneuver will require the forward firing thrusters, they are running small end forward. They will fire those forward firing thrusters for 23 seconds. This will carry them on a line-of-flight, which 180 degrees away, should put them 4 miles - 4 nautical miles below the path of the Agena. At that point then, a 130 degrees away from that point which will be the TPI if this was a standard rendezvous. It's not a standard rendezvous in that no additional maneuvering will be done. Only this first burn will be performed, it will have the effect of speeding them up, carrying them inside the path of the Agena, and from the point of Initiation 292 degrees totally, almost 3 - more than three-fourths the way around the world. 75 minutes after the Initial burn, they should pull up within a very few feet of the Agena. They should also have the target in sight during much of this time as they move around, particularly on the night-sides. The burn is to start at 65:27:21, it will be 3 or 4 minutes before Carnarvon acquires on this pass. During the closing period, during the ensuing 75 minutes, the crew will go ahead with that S-30 experiment using their low-light level T.V system onboard to look at the Geggenscheln or the luminescent clouds that form on the side

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opposite the sun. They seem to follow the sun, whatever the position of the sun, you find the luminescent particles clouds, whatever on the side directly - the side of the earth directly opposite the sun. We have had no contact with the crew since they left the Kano area, we expect none until - for another 6 to 7 minutes until they check in at Carnarvon. This is Gemini Control, Houston.

END OF TAPE

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This is Gemini Control, Houston, 65 hours 37 minutes into the flight. Gemini is over Australia. The burn came off as planned on time and it was almost precisely as planned. I think it was off one-tenth of a foot in one of the computer addresses. Conrad said he was observing the Agena at an elevation angle of about 3 degrees above them which would compare very favorably to the plan. In the course of the pass, it became necessary to bring on one of the main batteries. With so much equipment up and running in the spacecraft, it was found that additional power was needed. This had been anticipated about an hour ago by our E Com here, Rod Lowe, and the suggestion was sent out to Carnarvon, Bill Garvin there, suggested to the crew that they bring up one of the main batteries and that immediately solved their power difficulty. They were running a little short. Here is the tape conversation from Carnarvon.

CRO            Telemetry solid on Gemini.

TX has been transmitted.

Gemini is GO.

HOU            Roger.

CRO            Main Bus Volt is at 23.

HOU            23.

CRO            Rog.

Gemini 11, Carnarvon.

S/C            Go ahead, Carnarvon. This is 11 here.

CRO            Roger, at 65 + 38, I will give you a  
mark to turn the S-4 temp switch off.

S/C Say again.

CRO I said at 65 + 38, I will give you a mark to turn the S-4 temp switch off.

S/C Roger.

CRO How did the burn go?

S/C Just fine. We lapsed at one-tenth and 82, and 88 and 1 were zero.

CRO Roger.

HOU Can't beat that.

S/C We started to drop down on them right away, I could see that. He is about 3 degrees pitched up from us right now.

CRO Roger.

HOU That's about right.

CRO Roger, elevation angle from the spacecraft to Agena at the next sunrise will be 59 degrees.

S/C It's pitch will be 59 degrees is that correct?

CRO Roger.

S/C Thank you.

HOU Dick has a problem with sync on the D-15 have him bring up main battery No. 3.

CRO Roger.

S/C Yes, it might be true, Bill.

CRO Rog.

S/C No. 3 is coming on.

CRO Roger.

S/C            That did it. : Cleared it up right away.

CRO            Roger.

S/C            Yes, we need the computer on too for S-30.

CRO            Roger.

S/C            We'll run this way.

HOU            Great.

CRO            Standby for backup at 24.

S/C            Carnarvon, 11.

CRO            Go ahead. .

S/C            How is the Agena oriented now?

HOU            TDA north, lights on.

CRO            -90.

S/C            Roger, -90.

CRO            Computer mark at 65 + 38.

S/C            Roger.

CRO            Mark.

S/C            S-4 is off.

CRO            Roger.

S/C            Carnarvon, 11. Would you ask them what they  
want us to do about this OAMS Reserve tank  
here, just wait till our OAMS Reserve starts  
to be needed.

CRO            Okay.

              Did you copy, Flight?

HOU            Carnarvon, we indicate fuel short if anything.

              Okay.

CRO            I don't copy you.

HOU And he will probably not get to the AUX tanks.

CRO Say again.

HOU He is fuel critical and he will probably not get to the auxiliary tank.

CRO Okay.

11, Carnarvon.

S/C Go ahead.

CRO Okay, you are fuel critical, you probably will not get to the reserve tank.

S/C I am with you.

CRO And we are one minute to LOS.

S/C Roger, see you next round.

CRO Roger.

Carnarvon has LOS.

HOU Roger, Carnarvon.

END OF TAPE

This is Gemini Control Houston 66 hours 22 minutes into the mission. Texas acquired (bet you'll be able to see them okay) about 5 minutes ago. And apparently the crew reports the S-30 was completed on the night side and they are also elated, as people are here on the ground, the progress of this fly-by maneuver. The maneuver is of prime interest to the Flight Dynamics Branch which has handled all the computation. And it is turning out to be one of the more interesting aspects of this very interesting mission. In his report "Pete" Conrad again notes that the greasiness on his window. He says it's so bad he's having difficulty seeing through his reticle because there is a smudge of grease right in the path of the reticle. Here's the Gemini 11 report on the pass which is still in progress, the spacecraft now off the east coast of Florida.

Texas go remote

Texas remote

HOU Gemini 11, Houston in Texas. Over.

S/C Hello Houston, Gemini 11 here.

HOU Roger, we show you at sunset you should have a..at sunrise, you should have a pitch angle of about 60 degrees, over.

S/C Roger, we still see 'em every once in a while everythin is going real good, we're just finishing up S-30.

HOU Roger.

S/C We show about 9 per cent PQI.

HOU Roger.

HOU The Woomer tracking data if you haven't done anything indicates that you be out in front of him in....just where you want to be. over.

S/C Roger.

HOU We're going to get some tracking over the states and try to give you an estimate as to what your fourth mid-course should be, what we think it should be, over.

S/C Okay. And if you've got one for us, you want want us to burn yours?

HOU If you get one it'll be in the ball park I'm sure.

S/C Okay.

HOU As soon as you finish S-30 you can turn that main battery off. Over.

S/C Yeah, we just turned it off powered the TV down.

HOU Roger. Is your H<sub>2</sub> in the auto position? Over. H<sub>2</sub> heater?

S/C Negative, it's been off.

HOU Roger. Could you go to auto, please. 11, this is Houston, say again, could you select auto on your H<sub>2</sub> heater over?

S/C Yes, we did. Roger.

HOU Roger. Gemini 11, Houston, have you made any corrections yet? Over.

S/C Negative.

HOU Roger.

S/C No corrections. How's it look?

HOU Looks good right now.

S/C I have a problem here John that I ...my window is so greasy that I can't see him through the reticle. So I have to use the reticle with my left eye and track him with my right eye.

HOU Roger.

S/C Grease spot's right in front of reticle.

HOU Bet you'll be able to see him alright at sunrise. Grease or no grease.

S/C Okay.

HOU He's at 55.2 degrees.

Roger.

S/C correction.5.8

S/C He's coming out of the sunlight right now.

HOU Houston 11

HOU Go,over.

S/C Hey John, all I'll be able to get is enough down direction for this thing.

HOU Roger, we'll try to calculate your fore aft down here, over.

S/C Okay.

Houston 11, how do you hear VOX.

HOU Read you loud and clear.

Okay, see if we could use it a little bit.

HOU Gemini 11 Houston, over

S/C Go ahead, John

HOU Roger, we show a 6/<sup>forward</sup>2.4 right and nothing up-  
down, over.

S/C Understand, 6 forward, 2.4 right and zero up-  
and down. Is that correct?

HOU Roger. And that time of application is 66 30  
36, over. I say again, 66 hours + 30 + 36

S/C Roger. 66 30 36

GTI LOS Turk

HOU I think so too. You better look at it out  
there.

ANT LOS Antigua

END OF TAPE

This is Gemini Control Houston, 66 hours 37 minutes into the flight. We are over Canaries and while the crew hasn't told us what their range is, they are apparently quite close. This fly-by maneuver appears to have worked out extremely well. The crew did 16 fps forward turn a mid-course somewhere over the Atlantic, a corrective maneuver and apparently are coming out right - quite close to the vehicle. Dick Gordon has remarked three or four times about the position in which they found the tether. He described it as straight up, apparently fully extended and he indicates that the tether has independently gone on to prove out the gravity gradient. Here is the tape conversation as it ensues over the Canary Islands.

CYI Both vehicles are go

S/C In a straight up over top of it. Gravity....

CYI We'll have to double back on it.

CYI Okay. 6 percent

CYI Gemini 11, Canary

S/C hello Canary, 11 here ~

CYI Okay, we show both vehicles as go. We're standing by.

HOU Canary, has he maneuvered?

CYI We have intermittent TM at this time.

HOU Ask him if he made a mid-course.

CYI 11, Canaries. Have you made your mid-course?

S/C That's affirmative.

S/C That's affirmative and we've had zero up and down for correction and we added 6 feet forward.

HOU Roger.

S/C Close enough to see that the tether has stopped moving and is standing straight up like it is in the gravity gradient.

CYI Rog. And look at him in that kind of lighting Put your eye out. Do you copy flight?

HOU Affirmative. Send us some OBC's so we can read that elevation angle.

CYI Roger.

S/C Keep the shape of the thing.. Oh, these sextants

HOU Over. That's tremendous you guys, that's a wonderful fly-by.

CYI <sup>us to</sup> Flight, do you want/get a crew status report?

S/C Say again

CYI Do you want us to get a crew status report?

S/C No. No. That tether is straight up and down.

CYI Roger. We copy all of that, 11.

S/C 42, 42 degrees. 3,000 feet. It was 3,000 feet when I told you....

CYI Canaries from flight

S/C Go ahead, flight

CYI Why don't you turn the Agena recorder on and we'll dump it later.

HOU And we will dump it later.

CYI Have them turn it on?

HOU No, you turn it on.

CYI Okay, mark 2,000 feet.

11, Canary. 11, Canaries.

S/C Go ahead.

CYI Could you turn your encoder off so we can  
turn your Agena recorder on for you?  
Okay, you can turn your encoder back on.  
11, Canaries.

S/C Roger, we want.....

CYI Who is doing all that braking?  
Okay, he's got his encoder back on.

HOU Roger. Send us a couple of Mains so we can  
look at the fuel.

CYI On the Gemini?

HOU Yes.

CYI On their way. Mark 1,000 feet, you did it in  
55 seconds. So that's 50 feet a second.  
That's the best I can give you. That's all I  
can give you now.

S/C Canaries.

CYI Go ahead 11, this is Canaries.

S/C Are you reading all that?

CYI Well, your intermittent on your VOX.

S/C I said we're here, we're home free and we're  
just sliding in there very pushy now.

CYI Go, Flight.

CYI                   Canaries here, Go.

HOU                   Okay, Canaries. Standby I want to read the  
                      crew.

CYI                   Go ahead your reporting at 5 percent remaining.

HOU                   Wonderful.

CYI                   "They are home free", he says.

HOU                   Wonderful.

CYI                   Everybody at Houston is real happy with that  
                      11.

HOU                   Tell them we thought that was beautiful.

S/C                   You aren't any happier than I am or Dick.

HOU                   Beautiful.

S/C                   Why don't you keep repeating "beautiful."

HOU                   Five percent on the gage didn't he, Canaries?

CYI                   Say again, Flight.

HOU                   PQI, five percent left?

CYI                   That's right, he said he had five percent  
                      remaining.

                      11, your just about to our LOS and the reading  
                      is looking real good and we copy your PQI at  
                      five percent remaining.

S/C                   We're still braking a little bit but we're  
                      here about 50 feet out.

CYI                   Roger, understand, about 50 feet out.

HOU                   Tell him we think that was a great fly-by.

CYI                   Houston would like to let you know that we  
                      think that was a great fly-by.

HOU Gemini 11, Houston.

CYI We have LOS all parameters.

Kano go remote.

KAN Kano is remote and we have....

S/C We are station keeping, what do you want us to do with the gas that we have got left.

HOU Want to do another one?

S/C What, with 3 percent.

HOU Gemini 11, Houston, over.

S/C Go ahead.

HOU We are going to give you a mark to activate the blood package at 66:43.

S/C Okay.

HOU And then all you have to do is a 3 foot per second retrograde burn anytime before Carnarvon which we're showing as coming up at 67:10 about..

S/C Okay.

HOU Or go C-reentry continuous and C- adapter command.

S/C 66:43:00, John?

HOU Affirmative. 25 seconds.

5, 4, 3, 2, 1 mark - 66:43.

S/C Houston, 11.

HOU This is Houston, Go.

S/C The only thing we haven't found is the docking bar.

HOU                That's great. Can you go C-reentry to continuous  
                    and C-adapter to command. Over.

S/C                Roger.

HOU                Roger and we will require a crew status report  
                    anytime after you eat today, over.

S/C                Roger, Houston.

HOU                Gemini 11, Houston, over.

S/C                Go ahead.

HOU                Roger, we've got a request here to repeat any  
                    part of the sequences of S-30 performed on  
                    the previous night at your discretion.

END OF TAPE

HOU           The sequences of S-30, performed on the previous night, at your discretion to determine the effect, if any, of the close proximity thruster burns on optical surface of the S-15 equipment.

S/C           Okay, we'll look at it when we go into the dark side, here.

HOU           Roger, and then record the sequences performed. And the time for that, would be sequence 01 at 66 55, and then the rest of it at 67 hours and 25 minutes, which is about sunset. Gemini 11 Houston, 30 seconds til LOS

S/C           Roger, do you want us to perform the three foot retrograde any time before Canarvon, Is that right?

HOU           Right, which is about 67 hours and 10 minutes. That was great Pete.

S/C           Say again.

HOU           That was tremendous

S/C           Thank you. You should have worked with Richard.

HOU           Roger. He's a good man to have.

KNO           Kano has LOS

This is Gemini Control Houston, 66 hours 48 minutes into the flight. I'm not sure that the elation, which exists in this control center is apparent on the tapes. It needs to be underscored. The rendezvous was - well it was called a fly-by

It was certainly a rendezvous, an M=1 type rendezvous. It was carried off with apparently a fuel propellant useage of about 45 pound, which would be certainly a record. Furthermore, it was done with only one single corrective maneuver and some small amount of breaking to maintain a station keeping position of about 40 feet away from the Agena. The - probably the happiest people, of course, were the flight dynamic section, which set up the planning on it, also Glenn Lenney, himself, a former flight dynamic officer, who is the flight director now on this shift and Cliff Charlesworth, also the prime flight director on this mission, were present here along with Cris Kraft and it provoked one of the happier moments in the entire mission. The success of fly-by was remarked on several times by John Young, congratulations being passed along from Canaries and Kano. This is Gemini Control Houston

END OF TAPE

Gemini Control - Houston, 67 hours, 07 minutes into the flight. Canarvon has acquired, and Bill Garvin is putting in his first call to them. On this pass -- upcoming pass across the States, the spacecraft should be visible from Houston between roughly the hours of 4:30 AM and 4:40 AM Central Standard Time. If Houstonians look to the southern sky at precisely 4:36 AM, the spacecraft range from downtown Houston will be 445 nautical miles. It'll be 17 degrees above the southern horizon -- 17 degrees. It also will make a pass across this area at 6:08 -- at 6:08, beginning about 6:08 Central Standard Time. The elevation at that point would be 15 degrees again in the southern sky. It'll rise to 31 degrees elevation at 6:10. At 6:11, it should be 53 degrees, but the sunlight may bar the viewing. Probably the best viewing will be at 4:36. Pete Conrad has advised he has completed his separation burn from the Agena -- three foot per second retrograde burn to put him a reasonable distance away from the Agena, setting up for retrofire. Retrofire to occur 3 hours and 32 minutes from now. Here is the conversation from Canarvon as it's progressing.

S/C                    Go ahead, Canarvon.

CRO                    Roger. How'd your sep burn go?

S/C                    Just fine.

CRO                    What time did you burn?

S/C                    Sorry about that. I didn't write that data.

                      Did you want that?

CRO That's alright.

S/C Be advised that we've programmed module four  
and verified it.

CRO Okay.

S/C Canarvon. We are currently restowing aligning  
FTS band. We'll take a last look at the D-15  
and then go BEF for final alignment.

CRO Roger. Copy. Flight, Canarvon.

HOU FLT Go ahead.

CRO Did you copy about that time of the burn?

HOU FLT Affirmative. Canarvon, Flight.

CRO Go ahead.

HOU FLT Would you get an estimate from the crew what  
time they put battery three back on.

CRO Okay. 11, Canarvon.

S/C Go ahead.

CRO What period did you bring back up battery three?

S/C We brought the batteries back up when they asked  
us to look at it. We were station keeping on  
the Agena.

CRO Okay. copy

S/C Canarvon, 11

CRO Go ahead

S/C The best I can determine, we're stirred in the  
configuration as publised for reentry.

CRO Roger, copy

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HOU                    Carnarvon can we have another look at Gemini  
                         main?

CRO                    Roger.

END OF TAPE

S/C Bill we have two more passes with you , don't we?

CRO That's affirm. 43 and 44 and then the long ride.

S/C Okay. Trying to figure out what we're hurrying for, thought we were on our next to last pass. Module 4 is loaded and verified and (garbled) prelaunch.

CRO Copy.

HOU Carnarvon could you ask them if they have turned on their D15 equipment to warm it up yet?

CRO Say again.

HOU Could you ask them if they have turned on their D15 equipment to warm it up?

CRO Have you turned D15 on yet to warm it up?

S/C That's negative, but we can though. We're getting a night horizon out here shortly.

CRO Roger

HOU Copy

CRO AFD Carnarvon

HOU Go ahead

CRO Our computer has folded.

HOU Roger

CRO Have you got enough sun~~mar~~age?

HOU Stand by.

We'd like another main at LOS

CRO It will have to be a manual.

HOU Roger.

CRO Why don't you let us go ahead and reload it  
and then we'll play the tape back and cut  
you one. We're reloading right now.

HOU Roger.  
We're one minute to LOS, 11

S/C Roger. We'll see you next pass.  
Roger.

S/C Flight Carnarvon

CRO Roger

S/C We completed the Agena tape dump 5 minutes.

CRO Roger.  
Gemini, is the tape recorder off?

S/C That's affirmative.

CRO Thank you.  
Carnarvon has LOS on Gemini

HOU Roger  
LOS on Agena

CRO We'll get those summaries to you just as soon  
as we can.

HOU Roger.

Houston here. 67 hours 18 minutes into the flight. We have lost  
signal from Carnarvon. The weather in the recovery zone this  
morning is predicted as partly cloudy skies, widely scattered  
showers. Winds are forecast to be southeasterly 10 to fifteen  
knots, 2 to 4 foot seas. Referring to our earlier advisory on  
the sighting from Houston at 4:36, the range again at 4:36 a.m.

GEMINI 11 MISSION COMMENTARY 3:55 am Tape 237 Page 3  
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will be 445 nautical miles. The azimuth will be 147 degrees , that is if you look true south, the spacecraft would be in the southeastern skies just a little perhaps 30 degrees off true south. The elevation 17 degrees above the horizon. This is Gemini control Houston.

END OF TAPE

This is Gemini Control, 67 hours 37 minutes into the flight.  
Gemini 11 just passed out of range of the Canton Island  
station. We will play the tape of that pass for you now.

HOU Gemini 11, Houston at Canton, Over.

S/C Hello, Houston. Gemini 11 standing by.

HOU Roger. A target of opportunity for S-30  
is the Agena, over.

S/C Say again.

HOU Roger, for S-30, recommended target of  
opportunity is the Agena, over.

S/C Roger. Where is he?

Hello Houston, Gemini 11.

HOU He should be about 4 miles ahead of you  
there Pete.

S/C Roger. We don't have enough gas to do a  
..... but we can do it fuster.

HOU Roger, say again your last, over.

S/C Roger, I say again we have enough fuel to  
do it fuster but not ....

HOU Roger.

Gemini 11, Houston. The spacecraft is  
4 miles ahead of and below the Agena, over.

S/C Roger. We're aligning BEF, do you have the  
ACQ lights on.

HOU Roger, the ACQ lights are on, over.

Gemini 11, Houston. Over.

S/C Go ahead

GEMINI 11 MISSION COMMENTARY 9/15/66 4:20 AM TAPE 238 PAGE 2

HOU            Could you put your antenna Select to REENTRY.

Over.

S/C            Say again, John.

HOU            Your antenna Select to REENTRY now, over.

S/C            Roger, antenna Select REENTRY.

It has been.

HOU            Roger.

CTN            Canton has LOS.

END OF TAPE

This is Gemini Control, 67 hours 45 minutes into the flight. Guaymas about to acquire Gemini 11. We'll stand by live on this Stateside pass.

HOU Gemini 11 Houston at Guaymas, over.

GYM Go ahead.

HOU Roger. We're going to activate the - or deactivate the neurospora and blood package at 67 hours and 53 minutes. over.

GYM Roger. We'll be standing by for your call.

HOU Roger. That's S-4 mode C

GYM Roger.

S/C Houston, 11

HOU Go ahead. over. This is Houston, go ahead.

S/C You want us to de-activate both packages. Is that correct?

HOU Roger. Both packages

S/C Okay, we'll stand by for your call.

HOU Gemini 11 Houston, over

S/C Go ahead

HOU Roger, request a water gun count for a weight computations, over.

S/C Roger, coming up. 15 67

HOU Roger.

S/C Houston, 11

HOU Go ahead, over

S/C We've completed a flight plan, we're all done.

We're ready to come home one rev early.

HOU That's no fair.

S/C Hey, John, change that water gun count. We've  
been drinking. 15 74

HOU Roger.

S/C Looks fine.

HOU Have you had a chance to eat yet? over.

S/C Say again..

HOU Did you get a chance to eat yet? over.

S/C No, just that this morning. I don't think we  
will.

HOU Roger.

Texas go remote. Guaymas local

TEX Texas remote

GYM Guaymas local

END OF TAPE

HOU Gemini 11 Houston. Have you got a sleep report for us, over.

S/C We passed that out to Carnarvon but we'll tell you, we slept about 4 hours last night very well.

HOU Roger.

Twenty seconds to de-activation.

S/C Roger

4 3 2 1 de-activate

S/C Roger, both of them are done.

Houston, 11

HOU Go ahead over.

S/C Tally HO on Agena he's about 12 o'clock up 30 degrees. Say, I'd like to pass one other thing to you. I had a decided an impression on the rendezvous that I wasn't getting all the thrust I should get out of my down firing thruster.

HOU Roger, #16 over.

S/C Yeah, down firing thruster.

HOU Roger. Was it just like it was in the first rendezvous? Over.

S/C Was that the one I complained about before?

HOU Believe so.

S/C Say again.

HOU That's affirmative.

S/C                    Yeah, I couldn't remember whether it was a lateral one that I complained about before or a down firing GET. I just don't think I was getting all out of it that I should have been getting.

HOU                   Roger.

S/C                   I guess it will show up on the records, though Huh?

HOU                   Roger. It was the down firing one before. Over.

S/C                   Yeah, well the same problem this time.

HOU                   Gemini 11 Houston, your cabin pressure is down to about 495 below the regulation pressure we've been seeing on it. Over.

S/C                   Okay, you say it's point 495?

HOU                   four point nine five

S/C                   nine five....I can't tell any difference on our gauge but we'll watch it.

HOU                   Roger.

END OF TAPE

HOU Gemini 11, Houston. What was your position relative to the target when you started braking. Over.

S/C You mean on the ball.

HOU Affirmative.

S/C Just slightly out in front of him about 95, 100, 105, 110 degrees.

HOU That's about perfect, isn't it?

S/C Yes, it's worked out just like we tried it a couple of times.

HOU That's outstanding.

S/C (voice breaks)..coming up about the same place.

HOU Can't beat that.

S/C After the last correction, really he was inertial almost all the way in. I had to change the needles once because Dick dumped the computer on me but otherwise, I wouldn't have had to do that.

HOU Roger.

S/C I didn't want him to have too much help.

HOU Roger. How does that Navy man handle that sextant?

S/C Well, like a dream, John.

HOU Roger. I heard that R-dot.

S/C What did you think about it?

HOU 55 feet a second?

ATI AOS Turk.

HOU Bermuda, go remote.

BDA Bermuda remote.

END OF TAPE

Gemini 11 Mission Commentary, 9/15/66, 4:42 a.m. Tape 242  
Page 1

HOU Gemini 11, Houston. One minutes and 30 seconds  
at Bermuda.

Conrad Roger, Houston. We'll see you next pass.

This is Gemini Control at 68 hours, 4 minutes. Gemini  
11 out over the middle of the Atlantic, out of range of  
Bermuda now. Canary Islands will acquire in about two minutes,  
we'll come back then.

END OF TAPE

This is Gemini Control, 68 hours 6 minutes into the flight.  
We'll stand by now while Gemini 11 passes through the Canary  
Islands, then Kano, Nigeria ranges.

CYI TM solid Gemini, TM solid Agena.

HOU Roger, Canary

CYI Both vehicles go.

HOU Rog.

CYI S-band track Agena. We have C-band track Gemini.

HOU Roger.

CYI Gemini 11, Canaries

S/C Go Canaries, 11 here.

CYI Okay, we show you go here on the ground. We'll  
have Agena AFD when you're ready to copy.

S/C Roger

CYI Okay, area 45-1, 70 41 38, 20+10, 26+36, area  
46-4, 73 33 03, 20+09, 26+02. area 47-4, 75 08  
27, 20+05, 26+11. area 48-4, 76 44 08, 20+22  
26+29, Bank angles, all areas, roll left 85,  
roll right 95, weather good in all areas. No  
set maneuver required. Did you copy?

S/C Roger, copied everything but the 45-1.

CYI 45-1, 70 41 38, 20+10, 26+36. Did you copy?

S/C That's affirmed, Canaries. Thank you

CYI Okay, that's all we have for you this time,  
we'll see you next time around.

END OF TAPE

HOU Canaries from Flight.

CYI Flight, Canaries.

HOU LOS alpha Gemini.

CYI Roger.

Gemini TM seems to be braking up pretty bad.

We have TM LOS Gemini.

We have LOS at Canaries.

HOU Roger.

Kano go remote.

KNO Kano is remote.

We have contact.

HOU Gemini 11, Houston at Kano. Standing by.

END OF TAPE

....trol 68 hours 43 minutes into the flight. There was no conversation during the Tananarive pass this last time. Gemini 11 is coming up from Carnarvon. We'll stand by there.

S/C Okay, we're standing by to copy.

CRO Your pitch gimble at 400 K will be 92  
The horizon at retro will be dark and  
light at 400 K. Begin black out 22 plus  
40. End black out at 27 plus 56. REP  
of drogue 29 plus 41; REP of main 31 plus  
15. Your retro pitch angle is minus 20  
degrees.

S/C Copy.

CRO And we don't have anything else for you, if  
you need anything give me a shout.

S/C Roger. Do you know what we..what time you'll  
be giving me over Carnarvon for my vent timer  
countdown?

CRO We'll update you over the states on that.

S/C Thank you.

CRO Flight Carnarvon

HOU Go ahead Carnarvon

CRO Have you got a time that'll we'll set up the  
vent timer next time around.

HOU Stand by

One minute to LOS

S/C Roger, see you next trip.

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CRO

Roger.

END OF TAPE

GEMINI 11 MISSION COMMENTARY 9/15/66 5:26 am Tape 245 Page 2

CRO

Roger.

END OF TAPE

Gemini Control, 69 hours 3 minutes. Gemini 11 is over Canton. The Cap Com, John Young, just queried - you can hear, they are talking now.

HOU Roger.

Gemini Control at 69 hours and 4 minutes. At the start of this Canton pass, John Young ask the crew if they had noticed any degrading of thruster no. 6, that's a pitch up thruster. The ground here suspects that it might be a little bit soft but the answer from the Gemini 11 crew was that they had not noticed anything. We will continue to stand by during this Canton pass.

HOU Gemini 11, Houston, 1 minute and 30 seconds to LOS at Canton.

S/C Gemini 11, Say again.

HOU Say again, 11. Over.  
Houston, this is 11 - 11, Houston, say again, over. Gemini 11, Houston. Say again, over.

S/C Gemini 11, say again.

HOU That's what I thought you said.

S/C We can't read you, John. Say again.

HOU Roger, we'll get you over the States. Over.

HAW Hawaii has Agena contact.

HOU Roger, Hawaii.

HAW Hawaii standing by.

S/C Roger, Hawaii. We're in the process of checking our RCS.

HAW Roger.

END OF TAPE

This is Gemini Control at 69 hours 19 minutes. California about to acquire Gemini 11. We'll listen live to this stateside pass.

CAL California, over.

HOU Gemini 11 Houston at California, over.

Gemini 11 Houston at California, over. Gemini 11 Houston, over. Gemini 11 Houston.

S/C Houston, 11

HOU Roger, we have some information for your TR-115 pre-retro check list, over.

S/C Roger, go ahead.

HOU Roger, GETRC 70+41+36, RET 400K 20+12, RETRB 26+39, bank left 50, bank right 60. Your begin blackout in blackout drogue and main times did not change from Carnarvon. Nominal IVI's 225 aft, 115 down. Say again, 305 aft, over.

S/C Roger

HOU 115 down. The initial deflection bank angle at zero 225 up. At 55 degrees, 72 up, at 90 degrees, 70 down. Your 400K pitch angle did not change and your pitch angle at retrofire minus 20 degrees.

S/C Roger, I have all that, John.

HOU Roger, you'll have a dark retrofire at retro-

fire Nunki and Sagittarius, will be 20 degrees above the retrofire point. Above the horizon, over.

S/C Roger.

HOU Right on the bore side.

S/C Roger.

Guaymas go remote, California local

GYM Guaymas remote

CAL California local

HOU You're MDIU quantities are as follows, address 03 65 951, that was address 03, over.

S/C Roger, 03

HOU 04, 30 327; 05, 05 792; 66 340 99, 07 66 238, 08 40 331, 09 15 548, 10 024 16, 11 290 00,

S/C Gemini 11, Roger. copy

HOU The weather in the area 45-1 is 2,000 scattered and 10 miles, wind is 140 at 15 knots, wave height 2 to 4 feet, the altimeter setting 30 00, the recovery call signs, the ship is a Guam and there are two aircrafts in the area, Air-boss, callside Air-boss, over.

S/C Copy

Texas go remote, Guaymas local

TEX Texas remote

GYM Guaymas is local

HOU This is Gemini 11 Houston. If you get a chance can you turn your main batteries on and check them and give us a voltage readout, over.

S/C Do you want to bring them on the line?

HOU That's affirmative, over.

S/C Roger, they all check out at about 22 volts.

HOU Roger.

S/C Say, I got another friend down here besides the Agena flying to my left, and apparently closer.

HOU Houston, Roger. Gemini 11 Houston. We will send you that load now so you can check your MDIU quantities and then the TR will come up to you.

S/C Roger. ECS system

HOU Gemini 11, Houston. The set-up time on your vent time right at Carnarvon, is 18 minutes, over.

S/C Roger 18 minutes

S/C Houston, 11. MDIU quantities all check out.

HOU Houston, Roger. Load's confirmed from down here, too.

S/C Roger, Pre-retro check has just been completed.

HOU Roger.

S/C We rang out the RCS and all thruster, both rings,

look good.

HOU Roger. You're TR is coming up now.

S/C Roger, we got it.

END OF TAPE

HOU Gemini 11 Houston, what's the position of  
other friend you've got up there?

S/C I'm afraid that I had a particle flying  
wing on me there but it was much bigger  
than the rest of them.

HOU Roger.

S/C He was just looking for something else to  
rendezvous on.

HOU Tell him to try the Guam.

S/C Okay. Have you got a Charlie time and a  
Fox Carpet (?)

HOU Roger. Can you change your quantity switch  
to O<sub>2</sub> please sir?

S/C Roger. Gemini 11 has gone quantity O<sub>2</sub>.

HOU Gemini 11 Houston Over.

S/C Go ahead

HOU That /<sup>wrap</sup> time is 35 minutes and 15 seconds  
after retro. Over.

S/C Roger. 35 15.

END OF TAPE

HOU Gemini 11, Houston. Do you still have your  
Mains on? Over.

S/C Negative, we turned them off.

HOU Could you turn them back on, please sir?

S/C Okay, do you want us to leave them on?

HOU That's affirmative.

S/C Okay.

This is Gemini Control, 69 hours 40 minutes. Gemini 11  
passed Bermuda now. We'll pick it up again at the Canary  
Islands at 69 hours 43 minutes 37 seconds.

END OF TAPE

HOU Roger, Canary.

CYI We have C- and S-band track.

HOU Roger.

Gemini Control at 69 hours 43 minutes and the Canaries about to pick Gemini 11 up. We will follow through the Canaries and down through Kano.

CYI Gemini is GO.

HOU Roger.

CYI Gemini 11, Canary Cap Com.

S/C Go ahead, Canaries. 11 here.

CYI Okay, 11. I guess this is our last pass until the next mission. We show you GO on the ground and wish you luck.

S/C Thank you, and thanks for all your help and say "Hi" to everybody.

CYI Sure will.

Flight, Canaries.

HOU Go ahead.

CYI Okay, the  $T_r$  is somewhere between 0 and 125 milliseconds and lagging, it jumps back and forth.

HOU Very good.

Canaries from Flight.

CYI Flight, Canaries. Go.

HOU OBC, Gemini.

CYI Roger.

CYI               Canaries has LOS Gemini.  
Canary has LOS all parameters.  
HOU               Roger, Canaries.  
See you back home, Buck.  
CYI               Roger.  
HOU               Good show.  
Kano go remote.  
KNO               Kano is remote and we have acquisition.  
HOU               Gemini 11 at Kano. Standing by.  
S/C               Roger. 11. Roger Houston, 11.

END OF TAPE

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HOU                    Gemini 11, Houston. 1 minute 30 seconds to  
                         LOS at Kano.

S/C                    Roger, Houston.

Gemini Control, 69 hours 56 minutes. We're out of range of  
Kano now. Tananarive will acquire Gemini 11 at 70 hours  
1 minute 55 seconds.

END OF TAPE

This Gemini Control 70 hours 1 minute into the mission. Gemini 11 is now being acquired by Tananarive.

TAN Gemini 11 Houston at Tananarive. Standing by.

Gemini 11 Houston at Tananarive. Standing by.

S/C Roger Houston

HOU Gemini 11 Houston, We'd like to know how you liked your peanut cubes, over.

S/C We ate a couple. We thought they were pretty good.

HOU Roger.

S/C You're coming through Tananarive today like you were right next door.

TAN It's been a real good communication site this time hasn't it?

S/C Sure has. Right now it is the best.

Gemini Control at 70 hours 11 minutes. Gemini 11 passed Tananarive range now. We are 30 minutes 10 seconds away from retrofire.

Retrofire due to occur just passed the International Dateline, northeast of the Gilbert Islands. Gemini 11 should be at an altitude of 153 nautical miles at retrofire time. That time is 70 hours 41 minutes 36 seconds elapsed time. Carnarvon will acquire the spacecraft at 70 hours 18 minutes 15 seconds. This is Gemini Control.

END OF TAPE

GEMINI 11 MISSION COMMENTARY, 9/15/66, 7:00 AM, TAPE 253 PAGE 1

CRO            Okay, I will give you a hack then.

S/C            Be advised the computer is in receive.

CRO            Stand by for a hack.    3 - 2 - 1 - mark.

S/C            Roger, we got it. Yes, this is good.

Okay. Sure appreciate the help from every-  
body down there and that shore sure looks  
big from 750 miles.

CRO            Roger, Pete. The M & O's want to pass  
along their congratulations. And they  
want to know when you are coming back.

S/C            Whenever they will let me.

CRO            Have a good trip home.

S/C            Thank you. Thanks to everybody down there.

CRO            One minute until LOS.

S/C            Roger, thank you.

CRO            Carnarvon has LOS on Gemini.

This is Gemini Control 70 hours 27 minutes into the mission.  
We are 13 minutes 53 seconds away from retrofire. Gemini 11  
out of range of Carnarvon now. Canton will acquire at 70  
hours 39 minutes and it is 70 hours 41 minutes 36 seconds  
we will have retrofire. We will come back prior to Canton  
acquisition. This is Gemini Control.

END OF TAPE

This is Gemini Control, 70 hours, 38 minutes into the flight. We're about to acquire at Canton. We're two minutes, 35 seconds away from retrofire. Two minutes and 14 seconds away from retrofire. Weather in recovery area is good. This splash point is 610 nautical miles down range from the Cape. Coordinance, 24 degrees, 18 minutes north; 70 degrees, west.

Gemini Control, 58 minutes to retrofire - 58 seconds!

Gemini Control. The Gemini 11 crew has separated the equipment adapter. 30 seconds from retrofire. 20 seconds. 10, 9, 8, 7, 6, 5, 4, 3, 2, 1 - Retrofire! The crew reports a good retrofire. Let's listen to this conversation now.

S/C Address 81 reads 91, 82 reads 918.3.

HOU Houston, roger.

S/C Houston, retro jet.

HOU Roger, retro jet.

S/C Address 80 after retro jet, 303.1.

HOU Houston, roger.

S/C Attitude..., automatic retrofire.

HOU Roger.

HOU Give you a time hack in three minutes.

S/C Roger.

HOU 10 seconds, 4, 3, 2, 1 - Mark. Three minutes after retrofire.

HAW Hawaii has telemetry contact.

HOU Roger.

HAW Gemini 11, Hawaii standing by.

S/C Roger, Hawaii. We're just going through the  
post-retro checklist.

HAW Roger.

HOU Hawaii from Flight.

HAW Go ahead, Flight.

HOU How about OBC's?

HAW Roger.

S/C Hello, Houston, Gemini 11. Post-retro  
checklist complete.

H.W Oh, roger. Okay, everything looks good here  
on the ground, 11. Your cabin pressure's good,  
voltage is good, secondary fuel holding and  
rate pressures and source pressures are real  
good. We'll see you back home.

S/C Roger. Thank you much.

Gemini Control, six minutes, 38 seconds since retrofire.  
The retrofire officer and the Flight Director quite pleased  
with this retrofire.

END OF TAPE

HAW One minute to LOS.

S/C Roger. Thank you much. for all your help.

HAW Your welcome. It was a pleasure.

S/C No I believe it was all ours really

GORDON And I agree.

Gemini Control at 8 minutes 39 seconds since retrofire.

This will be the first closed loop or so called automatic reentry for a Gemini spacecraft. The crew sets up this retrofire and then when the bank angles are established they monitor the needles. The computer is hooked directly to the thrusters via electronics and drives the thrusters themselves. The crew will closely monitor this and can override the automatic system at any time they deem it advisable. We're at nine minutes 24 seconds now since retrofire. We have a short tape of the retrofire sequence. We will play that for you now.

HOU Gemini 11 this is Houston at Canton. Over

FD Canton go remote.

CTN Canton remote.

HOU Gemini 11 Houston at Canton. Over.

S/C Gemini 11,(garbled)

HOU Roger and we're at 2:23 now.

S/C Roger

HOU Two minutes

HOU Gemini 11 Houston, one minute

S/C 11, Roger.

HOU Thirty seconds

HOU 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, RETROFIRE

S/C Retrofire at 3:03 a.m., one right, 118 down

HOU Roger

S/C That dosimeter reads 02.8

Gemini Control, we're 23 minutes 45 seconds away from landing.

It has been 11 minutes 14 seconds since retrofire. Gemini 11  
now down below the 120 nautical mark. Velocity is about  
23 000 feet per second.

Gemini Control. This reentry ground track will come across  
Baja, California down across the northern part of Mexico, into  
Texas just south of Del Rio, will cross the Texas coast into  
the gulf just south of Victoria and will pass over the west  
coast of Florida right above Fort Meyers and leave Florida  
again just above Fort Lauderdale. We'll standby now for  
conversation as we come into California acquisition.

HOU Gemini 11 Houston at California. Over

HOU Gemini 11 Houston, over.

S/C Go ahead Houston

HOU Roger. The initial downrange needle deflection  
is 63 nautical miles up. Over

S/C Roger. Roger John we are standing by for the rest  
of our retro update.

HOU Roger.  
FD Guaymas remote, California local.  
GYM Guaymas.....

Gemini Control, recovery reports 12 aircraft airborne now  
in recovery area. Gemini 11 down to the 80 nautical mile  
mark.

Houston here, Gemini 11 should be out over the Gulf of  
California now at 17 minutes 20 seconds since retrofire.  
17 minutes 33 - 30 seconds until landing.

END OF TAPE

GEMINI 11 MISSION COMMENTARY, 9/15/66 7:42 AM TAPE 256 PAGE 1

HOU Gemini 11, Houston. Based on White Sands'  
track and you are over there now.

S/C Roger.

HOU Roger. Your begin blackout and end blackout  
times are good. Your RET to go is 29 plus 31  
RET to main is 30 plus 55.

S/C Roger 29 plus 31 and 30 plus 55.

HOU That is affirmative.

Gemini Control 15 minutes 41 seconds away from landing.  
And Gemini 11 crossing the northern part of Mexico, just  
about to cross over the Rio Grande River. Gemini Control  
14 minutes 53 seconds until landing. Gemini 11 has passed  
the 400 000 foot mark. Occurred just before - right at  
the Rio Grande River. Should cross the right south of the  
Victoria, Texas at 14 minutes from landing, about a half  
a minute from now. Heart rates during this retrofire 94  
for Pete Conrad, 78 for Dick Gordon.

S/C ...54... time was 0 plus 14. -

HOU 200K is - 400K is 20 plus 06. Over.

S/C Roger. We have ... up 0 plus 14. -

HOU 20 plus 06 is 400K time.

S/C Roger, John.

Gemini Control. Gemini 11 now in the blackout period. This  
blackout period began 22 minutes 40 seconds from retrofire,

GEMINI 11 MISSION COMMENTARY, 9/15/66 7:42 AM TAPE 256 PAGE 2

due to end 27 minutes 56 seconds. Gemini Control tracking shows that as of now we are very close to hitting the aiming point, this footprint. Gemini Control the aiming point is in the center of a footprint 200 miles long and 40 miles wide. We are now 25 minutes 14 seconds from retrofire. Still have slightly over 2 minutes left in this blackout period. Gemini Control velocity dropping off quite rapidly now as Gemini 11 digs down into the atmosphere down below 18 000 feet per second now. Seven minutes 49 seconds away from landing. Still in the blackout period.

END OF TAPE

Gemini 11 Houston.

HOU How's it going?

HOU Gemini 11 Houston, over.

HOU Gemini 11 Houston, over.

S/C I'm sorry Houston. We're right on the money,  
with an auto.

HOU Roger

What altitude are you at now? over.

S/C We show about or 3 G's

HOU Roger

S/C Should be asking for a roll now..

Yeah, we read you, let's us get the chute  
out, we still have our rudders down.

HOU Roger.

S/C Tell us when, we read you loud and clear.

Stand by.

Gemini Control , Guidance Control Officer, reports that about half  
of ring A of the re-entry system has been used at this time.

S/C This 86 reads 2418.

HOU Roger.

S/C and the 87 reads 29002

HOU Roger.

S/C We're to keep our light on the money with the  
altimeter.

HOU Roger

S/C Roger 1 2 3 4 5 5 4 3 2 1 on the air. Over.

HOU Reading you loud and clear. That was a good count there.

three zero zero through

....horizon

GUAM Got a hack on GT 11, we've got a 070 for a main.

We have R 1 correct by EVS bearing to 0 8 0 magnetic. over.

S/C Okay flight, GT 11 1 2 3 4 5 5 4 3 2 1 over.

Gemini Control and the Guam, the recovery ship, Guam has electronic contact with the spacecraft on the main chute.

Guam Gemini 11 this is Guam control.

The Guam reports visual sighting on the spacecraft on the parachute.

HOU Gemini 11 this is Houston. You're on TV now.

S/C Stand by there flight, we have a contrail dead ahead and bearing approximately 100.

Guam Roger, understand..dead ahead 100 from you..out.

Gemini Control that little parachute was bringing down the R R can. That little chute you saw on the TV screen there. The rendezvous and radar section of the spacecraft.

Gemini Control. The helicopter with the swim team is on the way to the splash point.

Gemini Control. The carrier Guam reports the spacecraft  $\frac{1}{2}$  mile from the ship.

Gemini Control. Three swimmers are in the water.

END OF TAPE

Gemini Control. A report from the carrier that the astronauts are in good shape. Both crewmen in good shape.

GUAM ...in the water. At the present time the flotation collar is being placed around the spacecraft and we see the frogmen dive underneath the Gemini 11 spacecraft to attach a ..... to hold the spacecraft.....

Gemini Control. The flotation collar is on the spacecraft. Recovery now reports the Guam 3,000 yards from the Gemini 11.

GUAM I see now that two additional swimmers dropped by Swim 2 have inflated their liferafts and they've retrieved the R & R section, as the three swimmers from 3D21 continue to move around the Gemini 11 making sure that the spacecraft flotation collar is on properly. The approach ship, the U. S. S. Guam is approximately one mile from the Gemini 11. The Gemini 11 spacecraft is ..... approximately one mile from the approach ship, the U. S. S. Guam. The two Swim aircraft, the helo aircraft....from anti-submarine squadron 3 are hovering at 40 feet around the Gemini 11, to lend any assistance to the .... swimmers.

SWIM 1 This is Swim 1 broadcasting on ... I see the astronauts moving around in the spacecraft.

We can see them very dimly through the ice  
splashed windows.....The three swimmers are  
still around the Gemini 11.....with winds of  
approximately 10 knots. The U. S. S. Guam is  
making an orbit around Gemini 11.

The swimmers are - demolition team 21 - have  
- are swimming over to the raft now.....

Swim 2 continues to make its circular ring  
.....

Gemini Control. We have a report that the swim team  
leader is recommending that pick up by helicopter - that  
Pete Conrad and Dick Gordon be picked up by helicopter and  
brought aboard the Guam.

SWIM 1 Roger, this is Swim 1,.....

SWIM 2 Swim 2, again. We're picking up the swim crew  
to complete this Gemini 11 splashdown and recovery  
by the approach ship, the U. S. S. Guam, and a  
detachment of eight helicopters from Helicopter  
Anti-submarine squadron 3. The three swimmers  
that are in the water are on the Gemini 11 ...  
raft at this time and they have the flotation  
collar fully inflated around the Gemini 11.  
At this time the Command Pilot and the Pilot  
are still aboard, but we have received the sig-  
nal from the ...21 that the astronauts are all

okay.

S/C Do you think it's okay to open the hatch?

SWIM 2 Gemini 11, this is Swim 2. Is everything....

... We now see that one of the swimmers is going aboard the additional raft.

Gemini 11, Swim 2. Recommend you keep your engines forward for three or four more minutes, over.

S/C Roger.

SWIM 2 Swim 1 is now approaching Gemini 11 to drop an additional raft to the swimmers. The green dye continues to dissipate into the water....

Swim 1 is now hovering beside the spacecraft at approximately two feet and has dropped the raft into the water. One of the frogmen has the raft and is pulling it over to the spacecraft at this time. The frogman now has the raft approximately 10 feet from Gemini 11.

This is Gemini Control. We have some approximate mileage figures here from the carrier. They estimate Gemini 11 was approximately five miles away when they got it on the chute, two and a half to three miles away at splash, and the splash was approximately seven miles from the aim point.

SWIM 2 The flotation collar is on the side of Gemini 11.

We have one frogman on the flotation collar

riding with the spacecraft. And we have two additional frogmen in the water keeping tabs on the ..... recovery section. Swim 1 is now coming back ..... Gemini 11. The swimmers are still on the flotation collar of Gemini 11. At the present time the spacecraft is floating nominally on that flotation collar. One raft depleted beside the spacecraft.

END OF TAPE

GUAM

.....an additional heat plane has went into the water and it was the final heater plane that ran attached to the R and R section of the Gemini 11 spacecraft. Right now the two swimmers on top of the flotation collar and they signal that everything is okay. Everything is A-OK. Now the Gemini 11 command pilot hatch is opening and we have one astronaut - apparently is standing in the spacecraft at the present time. He has his space helmet off and is standing. Now he is looking into the spacecraft and he is preparing now to climb out of Gemini 11 and proceed into the attached raft. He is now in the raft beside the Gemini 11 spacecraft. We now have the pilot. Astronaut Gordon is climbing out of the same hatch. We have one hatch only open and he is preparing to climb into the raft.

Gemini Control Houston, the Mission Control Center here estimates the landing was 1-1/2 to 2 miles from the aimed point.

GUAM

.....and he is attempting to aid his copilot. Now we have both astronauts in the raft. The Gemini 11 door is opened at this time.

As they are leaving, Conrad will know everything is okay. At the present time we have the Gemini 11 spacecraft. We have one hatch opened, the flotation collar attached and two happy astronauts sitting in the raft accompanied by two navy frogmen. At the present time the astronauts have inflated their specially designed Mae West that they carry with them. They have both of these orange waterway type affairs deflated at this time. The raft attached to the space however, is floating easily and there is a slight sea base. They have the swim one and photo aircraft/<sup>over</sup>nearby in preparation for a pickup. We have had no indication as yet of the third frogman that comes up for us spacecraft through the/flotation collar and closes the command pilot hatch. Now both of the hatches are closed. The astronauts continue to float easily in a four man raft attached to the flotation collar. NASA hasn't indicated as yet whether astronauts Conrad and Gordon desired to be picked up, though all indications point to a pickup by swim one.

?

....the QUL821 team signals that they want to

have the rescue plane of swim one lowered to the astronauts and have them hoisted aboard. Sea rescue plane of station three, swim one aircraft is now in the water and he is moveing in toward the Gemini 11 and the astronauts. The rescue plane is now approximately 15 feet from the astronauts as Lieut. Doege in swim one easily flies his helicopter for the pickup. Swim one is now directly over the spacecraft and the rescue plane is approximately five feet from the Astronauts, Conrad and Gordon. From this point I cannot tell which astronaut will be hoisted aboard first but they are at the present time attaching the left (garbled) around one of the astronauts and the navy frogman has signaled to raise the hoist. As one of the astronauts is lifted up by the helicopter, clear of the spacecraft and the raft, and is rising slowly and steadily up to swim one. The astronaut now is approximately half way up -----is now off to the side of the aircraft. The other crewmen of swim one have the astronaut, fore and aft, in the aircraft at this time. He is

in the aircraft at this time. The rescue sling of swim one is now being relowered down to the Gemini 11 spacecraft to pick up the remaining astronaut, deposit him in swim one and return him to the ship Guam. Both of the hatches of the Gemini 11 spacecraft are closed at the present time. The flotation collar is fully inflated and adds to the spacecraft to ride easily. The rescue plane is now in the water approximately two feet from the second astronaut to be picked up. ....Lieut. Doege and navy copilot Lieut. Rotsch should maneuver the helicopter over the spacecraft. .... only approximately 3/4 of a mile from this Gemini 11 spacecraft in preparation to receive the astronauts onboard the flight deck, then to move in to pick up the spacecraft itself. We now see the second astronaut is in the rescue sling and up he goes into swim one. He is now approximately half way up floating easily, slowly and steadily to the aircraft. The astronaut is now approximately 5 feet below the aircraft as the hoist comes up steadily. The two air crewmen, Petty Officer Scarborough and Barugh have the

astronaut in the helicopter at this time.

Both of the astronauts are in the swim one helicopter, getting prepared to depart of the area for the USS Guam, arriving onboard in approximately five minutes.

GUAM

Reporting at the Gemini 11 splashdown as the Astronauts Conrad and Gordon board the HF3 swim one, to return to the USS Guam accompanied by the photo aircraft which will also land aboard.

END OF TAPE

END OF GEMINI 11 MISSION COMMENTARY.